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OF THE

ASIATIC SOCIETY OF BENGAL.

VOL. XLI.

PART I. (HISTORY, LITERATURE, &C.)

(Nos. I to IV.—1872 ; with sixteen plates.)

EDITED BY

THE HONORARY SECRETARIES.

~~~~~  
"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted ; and it will die away, if they shall entirely cease." SIR WM. JONES.

~~~~~  
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-

ERRATA

IN

JOURNAL, ASIATIC SOCIETY, BENGAL, FOR 1872.

PART I.

Page 55, l. 19. *for* Qaráqylpág (?) *tribe read* Qaráqalpák *tribe, and add as a foot note*—"The Qaráqalpáks swore allegiance to Russia in 1732."
Perofski's Narrative of the Khiva Expedition in 1839.

— 73, l. 9. *for* سولدگور *read* سولدگر.

— —, l. 14 *for* جزیره *read* جزیره.

— 79, foot note, *for* Dalál (Jalál ?) *read* Dalál (Dínyál).

— 106, l. 7 *for* مظفرآباد *read* مظفرآباد.

— —, l. 14 *for* Zafarábád *read* Muzaffarábád.

— 107, l. 4, *for* النصر *read* النصر.

— —, l. 7, *for* Mu'in *read* Naçr.

— 175, line 23, *for* it is *read* is it.

— 178, " 42, *for* खतन्ना *read* खतन्ना.

— 179, " 14, *for* were *read* was.

— 180, " 16, *for* Rudra *read* of Rudra.

— 182, " 7, *for* If *read* It.

— 187, " 28, *for* vertebra *read* vertebrae.

— 193, " 25, *for* As'valāyanás *read* Asvalāyana's.

— 216, " 15, *for* Kalandavanouvana *read* Kalandavanouvana.

— 220, " 13, from below, *for* cette ville *read* cette ville aux Brahmanes.

— 252, " 15, et passim, *for* Sangi *read* Sangin.

— 263, " 9, *for* Giriyaç *read* Giriyaç.



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A.

Absent (nothing), Hadart.
 Ache, Tchiak.
 After, Latdok.
 Air, Hainh.
 Alive, Ye-erm.
 All, Aumtome.
 Always, Dul.
 Ambergris, Kampé.
 Angry, Muhungcore.
 Another, Deeoh.
 Answer, Oopshap.
 Arm, Chee-koal.
 Ask (to), Atot.
 Axe, Enloin.

B.

Baby, Kunyoon.
 Back, Oke.
 Bad, Had-lapoa, or Menkain-yosheh.

Bamboo, Hadwah.
 Basket, Hintai.
 Bathe (to), Lawn.
 Beat (to punish), Oodee.
 Beard, Enhoing.
 Before, Hadek.
 Begin (to), Hoolatai.
 Belly, Weeung.
 Below, Deg.
 Betel-nut, Heeya.
 Betel-leaf, Dai Heeya.
 Betel-tree, Tcheea Heeya.
 Big, Kadoo.
 Bird, Sheetchua.
 Bird's nest (edible), Heekai.
 Birds (ordinary), Hong-Kang.
 Biscuit, or bread, Puáng.
 Bite (to), Opkah.
 Black, Ool

Blind, Pukeean.
 Blood, Wah.
 Blue, Tehoongoa.
 Boat (Euporean), Haifoer.
 Body, Oke Enha.
 Bone, Ong-aing.
 Boot, Denapla or Shápatá.
 Bow and Arrow, Shenna-Foing.
 Boy (male child), Lit.
 Bracelet, Hutlaw.
 Brass, Kalahee.
 Brave, Yock-cháká.
 Breast, To-ákh.
 Breeches, Kunha.
 Broken, Dakgna.
 Brother, Tehao.
 Brother (half), Tama Oosheh.
 Brother (own), Tehao Enlooya.
 Bullet, Plooroo.
 Buy (to), Hullao.

C.

Calf (of leg), Kunmoana.
 Calm (no wind), Nyám.
 Cane, Nát.
 Cannon, Hen-wow.
 Canoe, Dooey.
 Can (to be able), Doh.
 Cat, Cochín.
 Chair, Kutteardeh.
 Cheat (to), Hai yoo nang.
 Cheek, Tapooah.
 Chest, Undaiyáh.
 Chief, Oomai-muttai.
 Child, Kenh-yoon.
 Child (own), Koo-un.
 Chin, Shummah.
 Clean, Kóten.
 Cloth, Loih.
 Cloth (strip of), Lanoa.
 Cloud, Kullahaya.
 Coat, Kunhoin.
 Cocoanut, green, Gnee naw.

Cocoanut, ripe, Gnoat.
 Cocoanut tree, Wee-ow.
 Cock (fowl), Kamoy-koin.
 Cold, Kaay.
 Come (to), Kaiteri.
 Copy (to), Hoomyee.
 Coral, Shai-yonn.
 Corner, Ongkaiung.
 Cover, Oke.
 Count (Imperative) Haro.
 Crying, Techeem.
 Coward, Pumma-hoin.
 Custom, Tatoicha.
 Cyclone, Hoorasheh.

D.

Dance (to), Katoaka.
 Danger (fear), Poohah.
 Darkness, Toey-school.
 Daughter, Kooún Engkána.
 Day, Haing.
 Dead, Kapa.
 Deep, Ool.
 Devil, Eewee.
 Dhoty, Loih Sharong.
 Difficult, Gnia-nayun.
 Dirt, Yuch.
 Dirty, Oomeh.
 Dishonest (untrustworthy), Chit-tong-natau.
 Distant, Hoeé.
 Divide (to), Hundowa.
 Doctor, Munloenna.
 Dog, Am.
 Dollar, Para.
 Drink (to), Top.

E.

Ear, Nang.
 Earring, Eetchai.
 Earth, Doo.
 East, Fool.
 East wind, Hainh-fool.
 Easy, Too-yayun.

Eat (to), Okenok.
 Ebb Tide, Tchoh.
 Edible Bird's nest, Heekai.
 Egg, Hooya.
 Elbow, Deg-ong Kaiung.
 Enough, Layah.
 European (man), Bajo taten hamatt.
 Eye, Owl-mat.
 Eyebrow, Oke-mat.
 Eyelash, Kut-fight.

F.

Face, Gnoitchaka.
 Farewell, Yu-tchuh.
 Father, Tchia Engkoin.
 Far, Hoe.
 Fear, Poohah.
 Feast, Yukura.
 Feather, Pooyawl.
 Fight, Pamon.
 Finger, Kancetai.
 Finish (to), Laird.
 Fire, Héoch.
 Fish, Ká.
 Flesh, Enh-há.
 Fly, Yooch.
 Flute, Hunhell.
 Forehead, Lal.
 Forget (to), Painatau.
 Fowl, Kamoy.
 Foot, (upper part), Okelah.
 Foot sole, Awl-lah.
 Friend, or, my friend, Kaiyol.
 Flood Tide, Hayow.

G.

Give, Hanh huttar, or, Hom koo am.
 Girl, Hooleeyen.
 Go (to), Tchuh.
 Gold, Emloum.
 Good, Lapoa.
 Grandfather, Tcho-um.
 Grass (jungle), Opyooap.
 Grass Lalang, Shenfo.

Grass, ordinary, Shen.
 Great, Kadoo.
 Green, Tchoongoa.
 Guano, Aingala-ah.
 Gun, Hunndell.
 Gunpowder, Taroo.

H.

Hair (short), Yoo-ock.
 Hair (long), Hunkoiya.
 Hand, Koal.
 Handkerchief, Langsheh.
 Handsome, Yahnaisnehka.
 Happy, Yah-natau.
 Hat, Shapeo.
 Hate (to), Ha-natau.
 Hatchet, Enloin.
 Have (to), Ought.
 Head, Koe.
 Headache, Tchiak-koe.
 Hear, Yang or Katool.
 Heart, Enka-hato.
 Heaven (sky), Kullahaya.
 Heavy, Langung.
 Hen, Ramoy Engkána.
 Here, Eeta.
 Hill, Kohinjuan.
 Hog, Nod.
 Hot, Ké-owyun.
 House, Gnee.
 Hungry, Oingna.
 Husband, Koin.
 Hut, Kunsherpa.

I.

Imitate (to copy), Hoomyee.
 Impossible, Oolahad Sheh.
 Inside, Awl.
 Invitation, Kala-kala younde.
 Iron, Karao.
 Island, Poolgna.

J.

Jar, Koodun.
 Jungle, Oltchua.

Jacket, Kunhoim.

K.

Key, Tunwahn.

Kill (to), Fhaw Kooee.

Knee, Kokanoang.

Knife, Innoyet.

Knife, (Toddy), Innoyet Tua.

L.

Lad, Iluh.

Land, Oal Mattai.

Large, Kadoo.

Laugh, Ité.

Lead, Tchoomper.

Leaf, Dai.

Leg, Lah.

Lemon, Carroy.

Lie (to lie down), Laan.

Lie (to tell lies), Mattai.

Life, Ahn.

Light (to light the fire), Haiyooing.

Light (not heavy), Had lang ung.

Lightning, Maig.

Like (similar to), Hangnésheh.

Lime, Shooka.

Lips, Manoing.

Little, Ompehnsheh.

Long, Kialeg.

Love, Shaiyong-yuntaw.

Listen (Imp.) Katool.

M.

Man, Paiyoo.

Man (old), Pomoy-sheh.

Man (young), Maiyerkh, or, Iluh.

Measure, Tah.

Medicine, Danoon.

Moon, Kahair.

Monkey, Dooen.

More, Paitery.

Morning, Ha kee.

Mother, Tchia Engkána.

Mosquito, Menh hoyá.

Mouth, Awl fuang.

Much, Odo hutchee.

Musket, Hundell.

Murder, Fhaw-kooee.

Muscle, E-hay.

N.

Nail (finger), Kaischua.

Nail (iron), Hun em.

Name, Layung.

Navel, Fon.

Near (not far) Mé-enh-houh.

Neck, Onglongna.

Needle, Tcha room.

Never, Kit ma.

Nest, Hongkang.

No, Wat or watchion.

North, Kappa.

Nose, Moanh.

Nothing, Hadart.

O.

Oar, Kan noot.

Obey (to), Yu yung.

Often, Dul.

Oil, Gnai.

Old (animate), Boomooashee Oomioha.

Old (inanimate), Lat shee.

Open, Foigna.

P.

Paddle, Pow-wha.

Pan (cooking), Chattee.

Pandanus, (tree), Larohm.

Paper, Lehpéry.

Parrot, Kattoch.

Perhaps, Yonghuddeh.

Pig, Nod.

Pigeon, Moongmoo.

Pineapple, Shoodoo.

Pipe, Tanop.

Plant (to), Opeep.

Plantain, Hehpoo.

Plenty, Yolor Oorohud sheh.

Poor, Pooap.

Present, Tunnier sheh.

Pretty, Yahnai shehka.

Q.

Question, Humma.

Quill-pen, Anet-lay-bery.

R.

Rain, Ahmee.

Rat, Koomaté.

Rattan, Pantang.

Row, Hooyow.

Red, Ak.

Rice, Arosh.

Rich, Chumwoahun.

Ripe, Eeshiun.

Ring (finger), Kunlongtai.

River (stream), Whaiédá.

Road, Kaiee.

Rope, Naat.

Roof, Oke.

Row, Kán nóť.

Rudder, Hunlaidedlá.

Run, Deeunna Hundial.

S.

Sand, Pee-yet.

Sea, Komaleh.

See (to), Hadduk.

Ship, Tjiong.

Shirt, Kunhoin.

Short, Mitatu, or, Meh-enh-Shehkoe.

Shot, Kutchung-kutchung.

Shoot, Hadeel.

Shoes, Shápátá.

Shoulder, Koe-oonga.

Show (Imp.) Hychung.

Shut, Kurrup.

Sick, Tchiak.

Sing, Eekaisher.

Sit, Eepoohenhde.

Sister, Tchao.

Sister, (half), Tama-oo-sheh.

Sister (own), Tchao Enlooya.

Skin, Oke.

Sky, Kulahaya.

Slander (to), Kaiyawnasheepaiyoo.

Sleep, Eetecah.

Small, Ompaisheh.

Smell, Eckait.

Smoke, Fosh.

Snake (Boa), Toolan.

Snake (ordinary), Paik.

Sometimes, Kaiyai or Hang-hang.

Son, Koo ur Engkoin.

Speak, Olyola.

Spear, Sha nenh.

Steamer, Tjiong-héoch.

South, Lákhna.

Star, Shok maleicha.

Strong, Koang or Mong egg.

Stone, Mungeh.

Stockings, Hunho-ulla.

Stand, Omshierma.

Stomach-ache, Tchaik Weeung.

Stupid (not clever), Hadokai.

Sugar, Shoonk.

Sugarcane, Máo.

Summer (N. E. Monsoon), Koeekapa.

Sun, Haing.

T.

Table, Menh sheh.

Tool, Deg.

Take, Okair.

Tell, Tchong Koe.

Teeth, Kanap.

There, Mataréo.

Thief, Káloh or Kahalacher.

Thigh, Poolaw.

Throat, Kolulla.

Thunder, Koodei (or Koomtoogna).

Tipsy, Hoo-yoy.

Tobacco, Oomhoi.

To-day, Len-heng.

Toe, Kanechlah.

To-morrow, Haing Hákee.

Tongue, Kalleetah.

Torch, Pal.

Tortoise-shell, Káp.

Turtle, Kap oltechua.

Tree, Tcheea.

Turban, Langsheh.

U.

Ugly, Oomeh had sheka.

Uncle, Hoey tchia.

Unhappy, Kit yah natau.

V.

Valley, Awl-hok.

Village, Awl-mattai.

Voyage, (long), Yohatayha.

Voyage, (short), Yock dooan.

W.

Walk, Ongshongha.

Want, Yok.

Warm, Kee-ow-yan.

Warrior, Hoo-Ekka.

Wash (to make clean), Atchek.

Water (fresh), Dak.

Water, Komalch.

Weak, Had-ko-ang.

Weapon (Europe), Hundell.

Weapon (Nicobar), Paiyooha.

Weep, Tcheem.

Weigh (to), Kunlah.

West, Shoo-hong.

White, Tenhya.

When, Kahé.

Wife, Kán.

Wind, Hainh.

Wing, Dánoyen.

Winter (S. W. Monsoon), Lakhna-shoohong.

Woman, Engkáná.

Wood, Ooneeha.

Work, Winnair shi sheh.

White, At-ait.

Y.

Yam, Kopaeh.

Yawn, Hing-ap.

Yellow, Laaom.

Yes, Aonka.

Yesterday, Mundee.

Young, Iluh.

NUMERALS.

1, Hayang.

2, Anh.

3, Loch.

4, Fooan.

5, Tanai.

6, Tafoeel.

7, Eeshat.

8, Enfuan.

9, Hayang hutta.

10, Shom.

11, Shom hayang.

12, Shom anh.

20, Hayang momtchierma.

30, Hayang momtchierma doktai.

40, Anh momtchierma.

50, Anh momtchierma doktai.

100, Tanai momtchierma.

TIME.

6 a. m. (sunrise), Hakee.

9 a. m., Alhákee.

Forenoon, Kohin dowha.

Noon, Kumheng.

1 p. m., Tchin foitua.

3 p. m., Tchin foitua, ainhsheh.

5 p. m., Ladéya.

Sunset, Pooyoieh.

Dusk, Hammok gnok.

Midnight, Yuang hátám.

1 a. m., Hanh-hooaka.

3 a. m., Pooyeh.

5 a. m., Tchungneecall.

Day, Haing.

Night, Hátám.

To-day, Len heng.

To-morrow, Haing-hákee.

PERSONAL PRONOUNS.

I or we, Chier.

You, Menh.

He, she, it, An, or, Poonan.

They, Oomtohm.

Who, Yehee.

POSSESSIVE PRONOUNS.

This, Neena.

That, Anaay.

Your, Tchiang menh.

Yours, Efe or Efoye bayoo.

My, Tchiang chier.

SENTENCES.

Come here, Kaiteri.

I will come, Yudook poonchier.

He will come, Yudook poonan.

Why are you afraid? Choonpahar menh?

Where is your village? Choon mattai menh?

Go there, Yu chu, or, chu.

Bring me some fish, Okai káh paite-sheh.

Light a fire, Haiyoon heeoh.

I don't know, Kit-akáh.

I know, Akáh.

Take away, Kai tery.

Who is he? Tchee ka an?

Get up, Koongha.

He lives at—, Kutool poonan na.

Be quick, La La.

Give me back (return), Yu Ooshoor hutta.

Don't come, Wat if edook.

Call that man, Eeorta paiyooch.

I am glad, Yonutto kaun chier.

I am sorry, Gniat nato kaun chier.

If it rains, I will not come, Yon ahmee kit to.

Have you ever been to—? Makun menh?

I have never been to—, Chier Kitma.

Where are you going to? Yu chun menh?

I am going on board the ship, Yu to-altjiong chier.

I want to go, Kai-yeng.

I will remain here, Yu katog kyaeta.

Have you any shells? Tchian kun menhta pooker?

How much do you want? Kah indokna sheh yok menh?

This is too much, Ooroohad shehka.

Sit down, Eepoonhenhdé.

More Buddhist Remains in Orissa. —By J. BEAMES, C. S., Balasore.

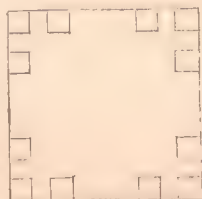
In continuation of the note on the Buddhist remains at Kopari recently contributed by me, I wish to record the existence of some more structures in other parts of Orissa, whose exact similarity to those at Kopari affords a confirmation of the theories suggested by that place.

On my way back from Katak, where I had been to attend the Durbar, which was not held owing to the melancholy incident which has spread such a gloom over all India, I pitched my tents at the village of Chhatiá (ଛତିଆ) sixteen miles north of the town of Katak. In the evening as I was taking a stroll along a village road, west of the encampment, I came to a flat surface of laterite closely resembling that at Kopari. At the foot of a small hill

was a square platform, about 40 feet square, of hewn laterite stones, from which rose twelve pillars, octagonal and with rounded capitals, but much worn by the action of the elements, and covered with grey lichen. To the west of this was a rude square building composed of the same stones, roughly put together without mortar. This had evidently been constructed from the stones of the older structure, as there were pieces of mouldings, capitals of pillars and sculptured stones, some upside down, and all evidently out of place. Inside, smeared with vermilion and turmeric, were numerous portions of statues, heads, arms, a mutilated trunk or two, few of which bore any resemblance to the traditional figures of Hindu mythology.

The images unfortunately are so smeared with vermilion and oil, that it is difficult to make out all the details. There seems to be a serpent's hood over the head of one, but it is too much worn to admit of any certainty.

The next day the camp was at Dhamśala on the Brāhmanī river, 31 miles north of Katak. One mile to the west of the road, at the foot of a little hill, on a small promontory jutting out into the river, stands a temple of Śiva, under the name of Gokarnes'wara Mahādeva, or as the peasants call it, Gok'us'r Mahādeb. This is one of the usual Śiva temples of the melon or ninepin shape, so common in Orissa. It faces the east, and in front of it is a square platform of laterite stones, surrounded by pillars exactly similar in design to the Kopari ones; they are twelve in number, three at each corner of the platform thus:—



The Mahādeb temple has been built of stones taken from some part of this ancient structure, though the fact is concealed by its being entirely covered with a smooth coating of plaster. The Hindú statues of late date surrounding this temple are of remarkable beauty and fineness. The principal figure is called by the people Saraswatī, and represents a smiling woman with four arms holding a conch and lotus, with many female attendants with laughing faces grouped round the principal which is not in relief, but has the stone cut away at the back of the figure.

This image was found in the river some years ago, and the others were found in the jungle close by, or as the attendant Brāhman states, suddenly appeared out of the rock, and ordered themselves to be worshipped!

Notes on a Visit to the Tribes inhabiting the Hills south of Sibságar, Asám.—By S. E. PEAL, Esq.

The various Hill tribes bordering on the valley of Asám, both on the north-east and south, present so many points of interest and seem to be so little known, that I take the opportunity of putting these few notes together of a short trip into the hills to the south of Sibságar district, Mauza' Oboepúr, hoping they may be of some use or interest.

Our ignorance of these various tribes, their many languages, customs, and internal arrangements, seems to be only equalled by their complete ignorance of us, our power and resources. The principle of clanship is here carried to the extreme; not only are there numerous well marked tribes inhabiting considerable tracts, as the Bútias, the Abors, Singphús, Nágás, but these again are cut up into small, and usually isolated, communities, who, among the Nágás at least, are constantly at war with each other. Their isolation is often so complete, that their resources lie wholly within their limited area.

There seems good reason to suppose that the present state of things has existed for a considerable period. Not only are the languages spoken by contiguous tribes often mutually unintelligible, but the still better evidence of strongly marked physical variation holds good. And to these inferences of a long period must be added the tangible fact, that at their villages, or 'chang's', and not elsewhere in the hills, there are numerous Jack trees, many of them very large, and not less than 400 years old, I should say, as the Jack is a slow growing wood.

I had often wished to visit some of these 'chang's', but had not the opportunity till this occasion; and though the season was rather advanced, I determined to go, as the Rájah of the Banparas had invited me for the third or fourth time. My nearest neighbour consented to accompany me, and arrangements were made to start on the 30th May, at day-break.

Before daylight our people were astir, caught the elephants, and tied our baggage. At 6 A. M., we started. Our party consisted of two native muharrirs, a barqandáz, and six Leklas, an interpreter, or Sokeal, joining us afterwards.

It was a beautiful morning, a fresh breeze blowing across Bhagmorial Potar as we passed through it, though we lost it on entering the jungle at foot of the hills beyond. The path, so-called, we found clearer than was to be expected; fallen trees and such like obstructions were singularly few. Game was looked for in vain, although it was evidently a good shooting ground; and tracks of buffaloe, pig, and deer, were plentiful. This luck indeed pursued us the whole way, though it must have been exceptional. We soon reached the Ladia Ghur, an old road, leading from Kukila Mukh

viâ Nazîra to Jaipur, and here so covered by jungle and bamboo as to be wholly impassable. It is usually considered the boundary line between us and the so-called Nágá territory.

The land then descends a few feet, and the river Tlok was seen ahead at a very picturesque little bend, making a capital foreground, as it splashed over the boulders and ran among the snags, the hills behind rising clear and blue. The swash of the water was quite a pleasant sound to us, so long accustomed to these muddy streams. After crossing it, the road lay through a fine piece of high land, and soon after entered and went along the bed of a small stream. We here dismounted; for the bed of the stream afforded a good path, as there was but little water, and consisted of sand and pebbles. Blocks of petrified wood lay about in profusion, and so good that the first piece I took up, I had mistaken for real wood. Quartz pebbles were plentiful, but the rock on all sides was sandstone. In some places the traffic had worn down the rock into a narrow passage, where only one at a time could pass, and also into holes and steps, very well for Nágás to grip with their bare feet, but slippery and unaccommodating to thick-soled boots. To this narrow gorge succeeded an open tract close to the foot of the first hill, part of which had been cultivated by Nágás a few years ago, and had now relapsed into rank grass, as U'lu, Borata and Hamorú, with a few trees here and there, and would in another few years be forest again. We halted here to let the elephants come up: the path in several places, having been obstructed by bamboo, had to be cleared a little for them. After another steep ascent, we reached the head of the pass, or lowest point in this first range, which here runs parallel with the valley.

The range of view extended from Jaipur in the east round by the hills on the 'North bank,' (or continuation of the Himálayas) which were beautifully distinct, and then as far west as Cherydo and Nazira. Both the hills we were on, and those bounding the north, presented a strong contrast to the plain we had just left. The latter seemed as flat as it was possible to be, literally a sea of jungle forest, an enormous dead level. The smallness of the area under cultivation surprised us more than any thing: it did not look one per cent. The Potars I could easily recognize, Búrasili, Nágáhat, Bhagmorial, Borhoh, Tyrai, Tinikuria, Rohona Potar, none were missed; yet they were but little green streaks, hardly noticed in the general view. With binoculars I could make them all out, even my bungalow houses. The amount of waste land is enormous. The Brahmáputra was not visible, though to be seen at times they say; we searched also in vain for Síbságar; the distance perhaps was too great, though it must have been within our horizon line.

While we were enjoying the prospect, the chief brother of the Rájah made his appearance with some of his people, and seemed quite delighted,

talking away as if we understood every word of his Nágá, and rattling his beads and bits of metal as he walked about. We soon afterwards proceeded over some undulating ground, and then took to the bed of another stream, also rocky, narrow, dark, and slippery; the rocks still being sandstone, with a dip to the south of 70° to 80° , in fact almost vertical, the strike running nearly east and west like the range itself. At a more open part of the road, we came to a large pit, about $12' \times 8' \times 12'$ deep, right in the path, and made to catch wild elephants. The bottom literally bristled with large bamboo spears, 5 or 6 feet long, firmly fixed in the earth, and carefully sharpened—certain death to any elephant falling in. The pit was nearly hidden by overhanging grass and creepers and was dug at a spot where the path on either side was difficult, and the edges were undermined. After seeing our elephants pass this safely, we went on the road now descending, and still over rock, usually very slippery, and winding about abruptly, when after a second steep descent, we heard the rush of water below and caught glimpses of the hills beyond. The stream was soon reached. It is a tributary of the Tiok, called the Sissa, running here to the east. It was now a small stream, but the rounded boulders on the flanks bore witness to its being at times a formidable obstacle. Having our doubts about the elephants being able to reach this point, we sat down at a little 'Dhubí', or water hole, under the shade of a Bor tree. The pool turned out to be full of fish, so plentiful in fact that on throwing in a small bit of gravel the whole bottom seemed to rise from all sides. Most of them were small; there were however a few large ones near the bottom.

The only way the Nágás take them is by hand or poison; but we saw a lot of Nágánís carefully turning the stones over, and occasionally catching a little one.

A Sowdong and a Hundekai both of whom I knew well, were here waiting for our arrival. A 'Sowdong' is a sort of travelling deputy to the Rájah; and a 'Hundekai' is a resident deputy, and is of a higher grade. The highest next to the Rájah and his family is a 'Khúnsai,' and there is one to each village. We consulted them as to the best route, and they at first advised us to go along the bed of the stream; but as it was so full of huge rocks and holes, that no elephant could pass, we had to decide on the ordinary mountain path via Longhong, the shortest way, but by far the steepest. The elephants at last made their appearance; how they managed to get down places, where we had to scramble on all fours was a mystery to us—at times they seemed immediately over us.

We crossed some deep clefts over which there were rude bridges. The steepness of the ascent, especially under the hot sun, soon began to tell on us, and the elephants seemed so distressed, though we were not half way up, that we called a halt, and held a council, the first result being to unload the ele-

phants and send them back to the Sissa, as we saw that we could not rely on Nágá estimates of distance or difficulty.

The Rájah's brother and the Hundekai of Longhong now had a long and noisy palaver, as to who should, would, or could, furnish the men to carry the few things left by the elephants. Their real power over internal affairs seems small: the men of Longhong treated the Royal brother as little better than their equal, and almost came to a row. Row enough there always is when they argue any matter however small; it seems their custom to speak loud and look excited over nothing. The Longhong Hundekai at last agreed to get the three or four men required, as his 'chang' was near, and we hastened their discussion by saying that if men did not soon come, we should follow our elephants.

The Rájah's brother now started off for Banpara to report that we would not reach it that night, and get some huts built half way between Longhong and Banpara where we could sleep.

This second hill is also of sandstone, running into a finer kind, and then into a laminated clay, with a dip to the south of about 70° or 80°, and often vertical and several times inverted. At the surface it seemed to form a rich loam, and almost the whole hill was under rice, though seemingly a bad crop.

The road still followed the crest of the ridge, as is usual, and we soon came to the region of bamboo, which is found close to the changs; and where it branched off leading to Banpara, we found the Longhong Khúnsai seated in state on some leaves, his spear stuck in the ground beside him. At some 20 feet on each side were other officials, also in state on leaves and with their spears. The Khúnsai I knew well, and had a talk with him. I found, he had a bad foot, tied up in very dirty linen, and told him to wash both and keep a water-poultice on. The only extra-decoration they indulged in was a topi with a long feather in the crown. We were passing on to see Longhong, when the old fellow hailed us, and gave us his formal permission to proceed. This we had omitted to wait for, but it seems to be considered by them necessary.

A Longhong went with us, while the rest awaited our return to this point. We now saw for the first time how they weed the 'dhán,' commencing at the bottom of the slopes and working upwards, in parties of ten to twenty. The dhán stalks seem far apart, and they use a bamboo loop to scrape up the earth, removing the weeds with the left hand and throwing them in little heaps. Each house or family seems to have its dhán marked out by sticks, stones, or weed heaps, and neighbours combine to work in batches. The rate at which they get over the ground was astonishing, the work being well done. The dhán was not in ear, and this was their second weeding. I was told, it was enough for this year.

The land had last year, I believe, been redeemed from young forest and

was almost destitute of trees and stumps. The labour they are put to for a scanty crop is almost incredible. They seldom cultivate the same piece of land for more than two years in succession, as grass comes up rapidly the second year, and they have no way of eradicating it, the only implement used in cultivation being the *dháo*. After the second year, they let the land go into jungle and make fresh clearances for their *dhán*. The hills are thus in all stages of jungle and forest, now all grass, as Borata, U'lu, and Hamorú; or ground deserted for three years, all in small tree jungle (for the trees kill the grass in that time); on other patches again larger trees may be seen, five and six years old, or eight and ten, and no grass at all. In about ten years all the available rice-growing land has had a turn, and they can clear the young forest again. They thus require far more land than the ryots in the plains, especially if the smallness of the crop yielded is taken into account.

We soon reached Longhong passing through fine groves of Lottu and Wattu bamboo, and came upon the fortifications of which I had heard so often. The first attempt almost made us laugh. There were a few sticks of ekra and bamboo stuck in like a common fence, on the off-side of a ditch about 6 feet wide by 6 feet deep, over which there was a small bridge.

A little further on we passed some small raised changs, on which we saw bodies tied up in Tocoopalm leaves, and roofed in. We heard it was the way in which they disposed of their dead. All customs relating to this subject are worth noting, so we examined them with some interest.

We next came to a kind of palisade, with a long narrow passage between bamboo walls, three feet apart, not very strong, but enough to check a rush. It was the most formidable point of defence, as it was commanded by a large rock in front, on which a house had been built to give extra cover, and had a precipice on the left, the right also being steep. There seemed to be no one on duty, which was contrary to what I had heard and expected. On entering the chang, we could see very few houses at a time, the ground being very uneven, and the paths steep and tortuous, eminently calculated for defence, and such as give the spear its fullest advantage, when opposed to firearms.

The houses were all thatched with Tocoopalm leaves and not grass, as in the plains, the centre posts also all projected through the roof line for some 5 or 6 feet, and were bound with leaves, presenting a very singular appearance. They were built without any arrangement, no doubt many times over on the same sites, the level being eked out by a platform raised on posts, which people use to sit on, or dance, or hold open air meetings.

But by far the most striking feature was the number and size of the Jack trees, many of them evidently very old. We were told that the fruit, of which there seemed a large crop, was religiously respected. Each house has certain trees. The timber used in building was also usually Jack, and as

it is one of the most durable timbers, the Jack trees serve two purposes. The hill summits around are destitute of them, unless where there is a village. There seem in fact no villages without Jacks and no Jacks without a village. We have therefore here a valuable means of reviewing their past history to some extent, as Jack, *Artocarpus integrifolius*, is a slow-growing wood, closely allied to the Sam, Chama, or *Artocarpus chaplaska* Roxb., so celebrated for building and other purposes, and which I suspect is the 'Satin-wood' of our English timber-dealers.

Water supply seemed a great difficulty. We often saw little troughs placed to catch drippings from the rock, but containing little else than mud. There are no tanks, I hear, and as most of the 'chang's' are built on the hill tops, where springs are not likely to be numerous, it seems a serious difficulty, enhanced too by the strata being all on-edge and sandstone. At this village, the water is obtained in a deep cleft facing the north and some 300 yards down; but even this occasionally fails.

We were taken to the highest point in the village from whence we had a fine view of the surrounding changs. To the east, nearest to Longhong and the plains, lay the Húrú Mútons' chang on its peak, which is wooded to the top. With the binoculars the houses could be clearly seen in detail, they seemed the same as in Longhong. The Húrú Mútons are the deadly enemies of the Banpara tribe, though so close. Next to the south lie the Kúlún Mútons, also on a hill, and next to them again the Bor Mútons, on a conical hill with the village on the apex. More to the south and in the extreme distance was the chang of the Neyowlung Nágás, or, as they are called, Abors; and due south was Unúgáon, one of the four Banpara villages. Several small ranges ran behind these, all inhabited by Abors, up to the foot of the Deoparbat due east. This mountain is uninhabited, and called 'Deoparbat' from an idea that it is haunted by a Deo, or devil. Hollow noises are said to be heard on the summit, where a lake is believed to exist. It is wooded to the top, and the western face is rather precipitous; here and there large masses of rock stand out clear of the forest and so light as to look like quartz. From behind Unúgáon a large hill rises, shutting in the view; on it are the so-called Abors, who can never get into the plains, though in sight, as the border tribes would "cut" them, as it is called. In the foreground of this hill lay a series of small hills, all Banpara territory, and on one of them we were shewn the village of that name where the Rájah resides. Nearly due south-west, Joboka rises, and is as conspicuous here as from the plains, having a gradual slope on its southern face, and a very steep one to the north. It is the hill of the Joboka tribe, with whom the Banparas are constantly at war, with varying success. As we were viewing the changs around, a good many women, boys, and girls came to stare at us, a compliment we often involuntarily returned.

The sun was now getting low, and we returned to the place where we had left the Khúnsai seated in state. He called several of the groups of weeders up to see us. They at first seemed afraid to come, most of them being women and girls, a few stunted and old, and some strapping wenches, who could do more climbing in a day than I in a week. We then took the path down the hill and among the dhán, that led to Banpara, many weeding parties on the road stopping to stare and jabber at us. They certainly seemed to work hard, though it was nearly dark, and long past the time to leave off work in the plains.

We now reached the point where the huts had been built on the Sissa River, and just as it got dark, our men with the loads came in at the same time.

The temporary huts were rude in the extreme, consisting only of a few sticks stuck in the ground and others laid across. Some wild plantain leaves formed our so-called roof. The stream rushing among the stones gave us a pleasant reminiscence of home, and soon sent us to sleep.

About an hour after, we were all roused up by a loud thunder-clap, and found by the incessant lightning that a storm was coming up. We therefore hastily rigged walls to the chang we slept on, a waterproof sheet making a good roof; our guns were stowed under our heads and our sundries under the chang. The rain came down in torrents, but we were so tired that we fell asleep, and did not find till morning that we had been saturated. Some Nágás came during the storm down from Banpara, bound for Longhong; how they managed to find their way in the dark puzzled us. We also heard bears not far off.

On the 31st we were up early, and had our breakfast. The royal brother now made his appearance, several Khúnsais and Hundekais came too, to escort us, and all who could muster up the remains of a coat, wore the same in our honour. On starting, we adopted the Nágá custom of using a staff, as they do their 'jatties', or spears, to assist us in getting over the rough ground, and found we got on far easier by its help.

The path, at first very steep and up a ferny cleft, soon became more level, and passed round the shoulders and along the ridges of a series of small hills, tolerably level in the main, and at a sufficient height to give us a good view of our surroundings. A part of the road had just been cleared for us, or the jungle and grass had been thrown aside, for which we were much obliged to them as the grass was literally dripping with dew. As in Asám, the morning dew here is like a shower, and on pausing for a moment, it sounded quite loud falling from the trees and jungle.

At about half way to Banpara, we came to a kind of abbatis, at a point that could be easily defended, *i. e.*, a narrow ridge with a precipice on each

side, and not more than four or five yards across. The obstruction was commanded by a rise in the ground beyond, on which there was good cover, while there was none on the near side. The fortification could not be seen, even from a distance, and was no doubt the best point of defence on the route. There was, however, another point further on where the road for a short distance was cut on the face of a precipice, and only a few inches wide. Here a few determined men could hold any number in check for some time, the precipice being so steep, that I plucked a leaf off a tree top that was fully eighty feet high. We soon after came to the region of Dollu and Wattu bamboos, of which there were immense numbers, and here saw cattle tracks, both cows and buffaloes, and were told they came by the same route as we did, which we could hardly credit.

They here asked our permission to fire a salute, no doubt to warn the Rájah's people of our proximity. We soon after reached the first point in the village finding it a counterpart of Longhong, extremely irregular and broken up, the houses all thatched with Tocoo leaves, and the centre posts projecting. The Jack trees were both large and numerous; we also saw a Nágá 'bik', or poison, tree, the leaves of which are used to intoxicate fish, an endogen and not unlike an aloe on a long stem. They at once conducted us to the Rájah's house, the largest by far in the chang, and also the highest. It was a repetition of all the other houses. We had to climb up a notched tree stem to reach the bamboo chang floor, and found ourselves at once in the Royal presence.

The Rájah seemed a shrewd man, about 40 to 45 years old, tall and of course tattooed. He was seated on a sort of huge stool about 8 feet by 4 or 5, over which there was a coloured rug of either Indian or English manufacture, certainly not Nágá. We were pointed out to a similar sort of bench opposite, at about 8 or 10 feet distance, where we sat down, glad to get a rest after our toil, and to look around us a little. The heir-apparent sat on a smaller throne, to the Rájah's right and at some 15 or 20 feet, a strapping fine young fellow. He had an heir-apparent-manner about him which was to some extent very telling, and was decorated *à la Naga*; for with exception of a black cloth flung round him while he sat, he had but a bead and cowrie costume, and was tattooed also of course. The Royal brothers of the Rájah were all en suite, and sat about Royalty on little three-legged stools, the whole of them with faces of such intense gravity shaded off by a futile attempt at indifference, that they looked supremely ludicrous. Of the brothers we found there were six; we had only heard of two. On the outskirts of this upper ten, sat and stood the sons and nephews, &c., some of them very smart young fellows, and decorated in the most fantastic style, and very few tattooed. In the distance sat the outsiders, and not a few. Most of the Khúnsais, Hundekais, and Sowdongs, who could do so, came to see us.

We were now treated to unlimited discourse, several speaking at once, sometimes in Asamese which we could understand, and often in Nágá which we could not—chiefly as to how the Rájah had heard of us, and wished to look on us as “brothers”, that I had been some three or four years so near and had never visited him before. The Rájah spoke of the difficulty which his people often had in getting grain, and that they then relied to a great extent on several villages in the plains. We in fact heard that in the Rájah’s house alone was there any considerable quantity of grain from last year’s crop. Some little stress was laid on our passing “their Duárs,” and we could plainly see that they had but vague ideas regarding their position. We were invited to behold the power and grandeur of the Rájah of Banpara, whose sway extended over several mountains and four villages, *i. e.*, Banpara, Longhong, Unú, and Nokrong, while neighbouring Royalty often was confined to one, and whose warriors were literally countless, at least by Nágá numerals.

We were then asked to perform a few miracles, in a general way, with which we immediately complied, firing our revolvers into a large tree stem close by. My friend led off steadily, and when I began he reloaded and kept it up and put five more from my revolving carbine. This was a good beginning, and there was a great deal of wind expended over it in ‘wah-wahing’; it was considered awful. He then drew fire from heaven, or rather the sun, through a lens of the binoculars. And no amount of persuasion would induce a Nágá to hold his hand under the focus. Matches were enquired after, and seemed to yield endless jabbering, when struck. I happened to strike one on my waist—it having nothing hard enough near, and I afterwards heard that they thought I lit it by simply touching my skin, and that my *deotá* must be a “knowing devil.” A magnet attracting or repelling a needle, even from underneath the paper it lay on, was ‘*dawái*,’ medicine, and seemed to astonish less than I had expected.

An inspection of the house was then suggested, and it seems the correct thing to sit in audience for a time at one end and then walk through to the other, letting off a few polite ejaculations *en route*.

The house must have been 200 feet by 50 at least, though perhaps in the centre not over 30 feet high, from the floor. Like most of them, it was built two-thirds on the rock, and one-third continued out level by a *chang*, where the ground fell considerably, and supported on posts. This last is the audience end, and had in this case no gable wall, the roofing being semi-circular, so as to keep out wet. For the first 50 or 60 feet where the floor rested on posts, it was like a huge barn inside, and had no partitions, the large Jack posts shewing well in three rows, one down the centre, and one each side at about 15 feet. Some of the Marolis, or horizontal beams, (*wall plates* of the builder) were enormous, fully a foot or a foot and a half thick at the but end,

and some 50 to 60 feet long. How they were ever raised to their places, let alone up such a hill, was a mystery to us, though we were told that men lifted them on their shoulders. On the right hand wall were hung bones and skulls of pig, deer, mitton, buffalo, &c. About 50 or 60 lower jaws of the boar, made a fine display, all hung in a row, some huge tusks among them—evidently all hung as trophies of “feasting.”

The central portion of the house through which we next passed, appeared to have a series of cattle pens on each side of a central passage, the floor being rock, it was dark as pitch, and by no means fresh. From the tittering and whispering we heard as we passed or stumbled through, we concluded it was the realms of bliss, and after a hundred feet of it, we came out into another large room or hall, dedicated to dhán husking and pounding, the huge úral, cut out of a solid tree, being placed lengthwise and having places for about forty people to pound at once; the floor was also covered with husks. Here also we saw a small bamboo quad, for refractory youths.

On returning to the audience end, we were told that the Rájah was ready to receive his presents, “as most of the Khúnsais and Hundekais had gone.” So we made our men produce what we had brought, having been previously told by our own people, that we must expect them to be dissatisfied, but not to mind it. We had a large purple cloth with broad silver lace for the Rájah, a scarlet shirt, clasp knives, a red blanket, and Rs. 20 in cash. The others came in for similar things of less value, but which were reduced by their being six brothers instead of two as we had expected.

No end of palaver followed, and as we had been warned, they wanted more. The Rájah, it seems, had set his heart on a gun. This we assured him was very strictly prohibited, and that we of course dare not give one, and this I had often told them, but no attention was paid to our remark, the way they urged it shewed how little they understand us. One of the oldest Sowdongs who has seen three Rájahs, a man I knew well and who understands me better than most Nágás do, got up and made a long speech in Asamese, reiterating all the arguments, and eventually proposing seriously, that I should write direct to the ‘Mahárání’, and explain clearly, that it was for the Rájah of Bampara, and she would at once accede to the proposition. This was hailed by all as a coup de grace for us, and the general buzz as he sat down clearly proved he had brought down the House. To this we had to answer, that if guns were granted to one Rájah, all would claim them, and some were, as he knew, very insignificant, so that we knew no exception would be allowed. A revolver was next tried for, but we said that they were very complicated, often going off when least expected, and killing those dearest, as well as nearest. I was then offered a slave, if I would yield the gun question, and I understood, a slave for life; but this we had to shake our heads over, and look serious.

The palaver continuing we retired to where a part of the hall had been partitioned off for us by mat walls, under cover of a remark we heard that if there was much talk, a Sáhib's head ached. We now enjoyed a little peace, a biscuit, and a cigar, in more privacy. A deputation soon after came in to urge the gun case, but we ordered them out, in a mixed dialect, saying that Sáhibs were not in the habit of paying taxes this way, and if they only wanted our presents, we should return at once. This had the desired effect. A procession now came up the house, headed by a Khúnsai and the Rájah's brother, the former beating a little gong, which was laid before us as the present from his Royal Highness, together with a couple of young goats; but we had been so worried, that we told our people privately, if possible, to forget them when coming away.

A visit to the houses of the chief brothers was next suggested, and we started off on a tour. They were all much alike, though smaller than the first: an audience end, open and with trophies of the chase and poison, then a series of the cattle pens as before mentioned, on each side of a dark passage, and a room at the other end for dhán-husking with its úral. The floor in all rose as we went on, the first portion being a chang raised on posts, and matted. We saw here some Abor women or girls, wives of the owners, one of whom, we were told, had cost five buffaloes, and was the daughter of an Abor Rájah. They seemed far more sprightly and intelligent and good looking than Nágánís, and could, we thought, understand us far better too; whether they were exceptional cases, I cannot say. They wore the hair in a long queue, tied up with beads and wire, and in many cases it was long, not cropped at all, as is common among Nágánís. Costume as usual was at a discount, and as is often said "a pocket handkerchief would make four suits;" yet with all this, I doubt if we could beat them in either real modesty or morals, and this applies to Nágánís too.

The Morrang (dead house), or place where the skulls taken in their wars are put, was next visited. It also contained the great drum cut out of a tree stem and hollowed like a boat. I had reason to think that they might have scruples to take us in, and as I had often tried to get a skull, I did not shew my interest in it outwardly. Roughly estimated, there were about 350 skulls. About half of them hung up by a string through a hole in the crown and in the open gable end, the other half lying in a heap on the ground. No lower jaws to be seen, nor hands and feet, as I had expected. The latter are always cut off with the bread when a man is killed, and confer another kind of 'ák' or decoration. None seemed fractured by a dháo, and a large number were of young people, or children, being small and smooth.

We were conscious of being face to face with the great cause of this tribal isolation, constant warfare, evidently a custom of great antiquity.

As long as social position depends on tattooing as here, and can only be got by bringing in the head of an enemy, so long shall we have these wars and consequent isolation of clans. The man who brings in a head is no longer called a boy or woman, and can assist in councils of state, so called. And he seldom goes out on a raid again, I hear. The head he brings, is handed to the Rájah, who confers the 'ák,' or right of decoration by tattoo, at which there is great feasting, and pigs, cows, or even buffaloes are killed, and no end of 'moád,' or fermented rice water, is drunk. Those who are not tattooed, when old enough, make a party and lie in wait for stragglers, men, women, or children, anybody in fact with a head on him; and as cover is plentiful, they can get on the enemy's land and lie in ambush along side his paths; never breaking cover unless certain of success and getting clear off. All those who get heads, get the ák on the face; those who get hands and feet, get marks accordingly; for the former on the arms, for the latter on the legs. No two tribes, however, have the marks alike, and some even do not tattoo the face.

The worst of this kind of warfare is that women and children are as often killed as men, and without any compunction. I had a smart little fellow here at work for a long time, named 'Allee,' (four) and once asked him how he got his ák. He said he went out and lay in wait a long time near a spring, and at last a woman came for water, and he crept up behind her, and chopped her on the head, and then cut it off, and got off himself as quickly and quietly as he could. It was utterly incomprehensible to him how such a thing could be unmanly, I found it waste of time and breath trying to convince him.

Besides the skulls, the Morrang also contains the big drum which is nothing more than a "dug-out." It is beaten by short heavy sticks, and can be heard a great distance. The drum from the Múton Chang can be heard here, at least six or seven miles in a direct line. Some are made of a hollow tree with the inside gradually burned out, and open at the ends, some 20 feet long by 3 to 4 in diameter.

From here we went back to the Rájah's house, and heard an alarm of fire, which, from the general excitement, seems to be rather dreaded. On the chang we had a good wash, water being poured out of bamboos. It is here also rather scarce, and I dare say they considered it woeful waste to use it for such a purpose.

Our dinner was now ready, and as it was getting dusk, we went into our apartment, not, however to dine in private, as we had hoped. Our mat wall contained too many loopholes, to be resisted by feminine curiosity, and an audience of thirty or forty had to be submitted to, whose exclanations at every new phase in our proceedings gave us proof of our being among many people who had never before seen a white face. I have no doubt that the *modus*

operandi was to them mysterious in the extreme; our candles, tumblers, knives, forks, and spoons, were as good as news in a foreign tongue.

It being now dark, we made preparations to let off a couple of rockets, which I had brought, as a final exhibition. A good site was selected where they could fly over an uninhabited precipice, and yet be seen by the whole village. A bamboo tube guide was soon placed and the fuse lit, after placing the Rájah's party where it could be well seen. The fuse, however, went out and had to be re-lit, when the rocket flew off beautifully, just in the direction I had wished. A gun had been fired to warn the pykes to be on the look out, and we heard a hum of exclamations at once. After about five minutes, I fired the other and it flew, if anything, higher than the first, and burst well, the stars coming out well too, a piece of the case kept burning just long enough to let them see their value. It was evident, they were in mortal dread, as they told us that they were all very sleepy. I afterwards heard that the rockets were looked on as two devils, which I do not wonder at. As a "peace-offering" they were very valuable, I have no doubt. Our audience had to be turned away at last, as they shewed signs of staying by us all night, and we went to sleep. We were disturbed about two or three hours after, by a torch being thrust in, and found we were being 'interviewed' by some fresh arrivals from another chang. To this we responded in Anglo-Saxon and Asamese adjectives, and had them bundled out, and got peace at last.

On the 1st June, we were awoken by the old Sowdong calling out to us that if we slept after the sun was up, we should be ill, which must be a Nágá proverb. The view to the east, as the sun rose behind Deoparbat, was magnificent. The bottom of the valleys filled with white mist, the mountain shadows crossing in great blue bars, an isolated peak rising here and there clear like an island wooded to the top. We were ready to start, and were advised to start soon, as the sun would be hot. We bade adieu to the Rájah in pantomime fashion, to which he responded, and then went away, each provided with a staff that saved us many a slip.

The walk did us good, and we got to the Sissa at 8 o'clock, a distance of about five or six miles, and sat down for a short time, to see if our men would come up. I went a little way up stream to a picturesque bend where the water rushed on each side over large boulders in the bed, making a great noise. The cliff on the other side was a sheer precipice of sandstone strongly laminated, dip to south 85° to 90°. Here we watched some girls gathering stones about the size of oranges used in preparing rice.

Finding our men did not soon come up, we started on through the Erra back towards the Longhong path, the sun being fearfully hot, and several times we had to rest, there being no shelter. On gaining the Longhong road, we sat down and found the Nágánis close at our heels though carrying heavy loads. We here remarked for the first time the peculiar noise like a whistle or

note on a flute, clear and plain and seeming to come from the chest, made by Nágínis when carrying loads and distressed. The men told us that they always did so, when fatigued and out of breath. Subsequently we heard the same noise or note, and found it was made by an old Nágáni, who carried a maund of rice and seemed half dead, though a muscular old lady.

We now selected a hut among the dhán in which to rest and enjoy the view till our men came up. It certainly was a magnificent view, and I could see a white speck on the horizon towards Sibságar that may have been the Rongghar or Ghargáon.

We were highly amused at the Húlúks, or long-armed apes. They halloood, the chorus being led off by one giving two distinct whistles; he then stopped and the chorus rose to a climax and fell off again; after a pause the two distinct whistles were repeated, and the chorus at once broke out again. In no instance did they ever begin without the "que." Subsequently I found that I could start them by using a railway whistle, which I use to attract deer on moonlight nights. I do not know, by the way, if the fact is known, that on hearing loud whistling (during October and November, at least) deer will charge. I once shot a large Sambre doe, as large as a pony, skin 9 feet from the nose to tip of tail; on my whistling loud, it charged out of the jungle into the open and, on repeating the whistle, charged straight at us, when I knocked it over at twenty yards. Eight men could hardly carry it in. The fact is well known here, but I do not know if naturalists are aware of it.

While resting in the hut and admiring the view, some Nágás and Nágínis came up en route to see the elephants. We therefore accompanied them and soon got to the Sissa where the elephants were located and found all ready to start. Many people had come to stare at the tame elephants, and to fish. We were admiring the surroundings, and watched the women catching fish by hand, when a man came to say that our muharrir had had some difficulty in getting our loads carried down, and that after starting one man had run away, though close to the chang, and he had to return and get another. Our loads were thus so delayed, that we determined to push on home, where we arrived about 5 p. m., earlier than we had expected, as the distance must be 20 to 24 miles; but we were not so fatigued after all.

The muharrir came in after dark, very much disgusted at the trick they had served him. The influence of the Rájah seems less than might be expected and the liberty of the subject at its maximum.

We could not help speculating, during our trip, on the effect of introducing some good seeds, as the potatoe, which would no doubt grow here luxuriantly. From internal evidence, the population seems to have been stationary for a long period, perhaps centuries. The checks are all positive, too, such as constant warfare and the want of food, inducing disease,

&c.* The trouble, time, and labour expended in raising their crop of hill rice, or their Koni dhán†, if sunk in potatoes or wheat, would yield them four or six fold, and enough to supply the plains with the former, as in the Khassia Hills. Whether it is politic to render them wholly independent while they have such vague ideas regarding their relationship to us, I cannot say. A peace policy till we get a railway, would seem the best for us planters, unless extraordinary vigour was shewn. A glance at the map, and a knowledge of what they have done, would shew at once that they could nearly annihilate tea south of the Brahmaputra, by a system of night raids, for which they are famous. The present almost deserted state of this portion of the Síl-ságar district, between the Dik'ho and Diling and south of the Dhodúr Alí, is a standing proof of what they did forty years ago, "committing such devastation," according to Robinson, "as to force the ryots to remove from the neighbourhood, and stop all communication by the roads." And there are men living who remember this tract as a vast village, or a series of villages. The destruction was done by Nágás, Burmese, and Singphús.

Not only during our trip, but both before and after, the question of our present mutual relationship pressed on our notice. It is not a bad habit, especially in a country like this, which we have recently invaded, to get the "oldest inhabitant" in any locality, and enquire. Thus we here heard among others, that there never was, in the old days, a fixed boundary to the province here, and not only did the Nágás give regular tribute in kind to the Asamese Rájahs, but the so-called Abors as well. There were both Nágá and Abor 'Sokeals,' or Official Interpreters, and the Abor tribes had access to the plains through certain routes, now closed to them. I see also, by referring to Robinson's *Asam*, p. 384, that the Nágás about here are reported to have paid allegiance to the Rájahs of Asám, and again so at bottom of p. 386. As far as I can see, the tribes about here now forget this, and consider themselves *de facto* free, and any attempt on our part to remind them of their former allegiance by active measures, such as taxation or surveys, would lead to serious complications and to a

* We did not see the places where they cultivate their kachchús, and garden produce, called "Erra;" but I have since seen some clearances of this kind, at the Nágá village near Borlát on the Desang and Dhodar Alí. The land was carefully enclosed by a fence made of the boughs of the trees felled inside the clearance, not piled carelessly, but built up so as to be wholly impassable and impervious to pigs. Inside, I found kachchús, chillies, yams, and also mint, cotton, and plants which I did not know. The ground was carefully weeded, and paths led though it, and small 'longís,' or huts on posts, were erected here and there to serve for watching at night.

I found many opium-eaters at this village, even among the lads. They are Mohongías.

† Koni, dhán, and sowl.

combined action on their part. What we have most to fear is their incredible ignorance: hemmed in and stationary themselves, they cannot comprehend our having other troops than what they see at Dibrogarh, and laugh to scorn any idea of our being able to cope with them. Like an enraged child with a knife, they may inflict some severe cuts before the knife is taken from them.

The question of population of course occupied our attention, and is one difficult of solution. This tribe consists of four villages, and the mean of several Asamese and Nágá estimates of the number of houses was as follows:

Banpara,	300 houses.
Longhong,	200 "
Unú,	350 "
Nokrong,	50 "

Or a total for the tribe of 900 houses.

I am inclined, however, to think it far above the truth, and that 600 houses is nearer the mark, and that the able-bodied men are about 1,000 to 1,200, or two to a house.

The Joboka Nágás have five villages, *i. e.* Joboka, Kamlung, Bor Útú, Hárú Útú, and Longting, and an Asamese estimate gives the following numbers:—

Joboka,	500
Kamlung,	400
Bor.Útú,	400
Hárú Útú,	300
Longting,	200

Total 1800 houses.

This also, I think, is over-estimated, and 1000 to 1,200 will be nearer the truth. This would give, say 2,000 able-bodied men.

The Mútons have four villages, *i. e.*, Bor Múton, Hárú Mútons, Kulun Mútons, and Naugáon, (I may add that it was called 'new village' at least sixty years ago). Whether these are really separate tribes or simply different villages of one, I cannot say. A Rájah is at each, but they never go to war with one another, but fight on the contrary together, I believe, against any enemy. Their ák also is the same.

Of the Bor Duárias, Páni Duárias, and Námsangias, I cannot give an estimate, but I think that they have not less than 1000 to 2000 houses, each tribe.

Some of the Abor tribes again are very small and consist of but one village, and that a small one; as the village and tribe of Bánhsang (Bamboo-chang). With a powerful telescope, which I had for a short time here, I could make out changs on many peaks, far in the distance to the south, of whom neither the Asamese nor the Nágás had any knowledge whatever, and no name but Abor, and I regretted not having a good telescope with me when on my trip, as we could have seen changs away in several directions, not to be seen from the plains.

Between the Desang on the east and the Dik'ho, there are as many as 8 or 10 tribes having a frontage to Asám. From Desang to Lufriy alone, only 35 miles, there are six tribes, *i. e.*, Bor Duárias, Mútons, Banparas, Jobokas, Sanglors, and Lakmas, and this gives but six miles average frontage. They do not extend far into the hills, so that each may safely be said to occupy about 40 or 50 square miles. In some cases a tribe is more extensively placed; but again in others, as Sinyong, the entire tribe consists of but one village. I know of no cases where one tribe has conquered, and become possessed of the lands of another; hence the *status quo* seems of long continuance. The oldest 'Nogions,' or new villages, are not less seemingly than 40 or 50 years.

As a consequence of the above noted custom of head-cutting, and its isolating influence, few Nágás reach the plains, but those living on the border. We thus see a community of some hundreds perched on a hill, and depending almost exclusively on their own resources, constantly fighting others similarly isolated, on all sides, yet thoroughly able to maintain themselves. Perhaps in no other part of the world can so complete a tribal isolation be seen, and subdivision carried to such an extreme. The available land, too, seems all taken up. To every 40 or 50 square miles there are about four villages, of perhaps one hundred families each; yet from the nature of the case, as before stated, not more than an eighth or tenth of the land available can be cultivated at one time, and the population would seem to have reached its maximum.

I am aware that in some places there are hills and ranges said to be uninhabited, but I know of no such places here, except the peaks and ridges of the highest hills, 5,000 feet high, or more. All the other hills, as far as the telescope can penetrate, shew signs of recent or previous cultivation. But not even the names of the tribes are known, let alone the villages. Indeed, I have lately detected large villages where all Nágás insisted that there were none.

The raids and isolated murders for which this large tract of country is so celebrated, have one feature in common, *viz.*, surprise. Cover is so universal, and favourable to the attack, that advantage is invariably taken of it until the last moment. As a rule, when a whole tribe is at war, the

cause is a general one. One Rájah or tribe has been grossly insulted by another. In such cases a *chang* may be surprised and burnt by a combination of several villages. In other cases a single village of one tribe is at war with another village of a different tribe, without involving the other villages in hostilities. Bor Múton may be at war with Unú, and not involve Kilúns or Loughong. Or again what is a common form, the young and untattooed men of three or four villages of say two distinct tribes may combine and, headed by a few older men, quietly traverse the jungles to a more distant tribe and village and, suddenly attack the people in their cultivation, the object being simply heads.

Returning to the Banparas, I may say that with regard to weapons, they use, like most Nágás, the 'jattie,' or spear, and the 'dháo.' They also use the cross-bow.* I see that Robinson lays great stress on their not having bows and arrows; he considers its total disuse a very singular circumstance, and draws rather weighty conclusions from it. It is not, I hear, of recent date. In the use of the jattie they seem clumsy and bad shots; I have tried batches of several tribes at a mark for prizes, but found them unable to reach 80 yards. Nor could they touch a sack of straw for half an hour at 60 yards (where I volunteered to go and be shot at), but at 40 yards one did succeed.

Captain Norton says in his book on 'Projectiles,' that he could once throw a spear 170 yards, and saw the wife of an Australian chief throw one 120 yards; hence the Nágás do not seem very formidable on this score. They use their jatties for close work, usually from ambush, and never attack in the open.

The dháo is used as a hatchet or mace, and held by both hands. One blow is usually enough, if fairly given in a fight, as they can cut with tremendous force. The jungle is so thick and common, that their warfare is wholly by ambush and surprise, and this gives the dháo great advantages.

The bow is chiefly used for game and pigs.

They have a shield, or 'phor,' made of buffalo or boar skin, and often ornamented by goat's hair dyed scarlet, or by cowries. It figures in their war dances, but I suspect is not much used elsewhere, unless in a premeditated onslaught.

Like most savages, the Nágá seems to aim at making himself look as hideous as possible, and their decorations at times of festivity have solely that object. Their head gear seems generally to have some bunches of hair fastened to long light stems so as to jerk about while moving. It is the hair of the man or woman who has been killed, and in all cases, I think, is human hair, if not of an enemy. But there seems no one particular head gear which

* 'Hap' in Nágá.

all adopt ; on the contrary, there is infinite variety ; any one who can dress or look more hideous than his neighbour, is at perfect liberty to do so.

The chiefs often wear a long dark blue coat like a dressing-gown not tied, that contrasts strongly with their usually nude condition. Asamese cloths are also bought, and worn by the Nágás who can afford the luxury, during the cold season, but those who cannot, wear the little scrap commonly seen at all times and about the size of foolscap. Women wear an equally scanty morsel, which in some tribes, I hear, is even dispensed with. Pewter, or red cane, bracelets or armlets are considered of far greater value and moment. As far as we could see, the women wear no head gear at all, and about half have the hair cropped short.

The bunches of hair and feathers on the tops are all usually mounted on thin slips of buffalo horn, exactly like whale bones.

Of trade there is little or none. With the exception of the salt mines or springs eastward, and some pán and kachchús brought in exchange for rice, there is no such thing as trade. The tribes are too poor to be able to trade, and the constant state of warfare renders commerce impossible. On concluding a peace, some dháos and Abor cloths change hands, or a mitton ; but as a rule the border tribes act as a most effectual barrier to all attempts at commercial transactions with those beyond.

It may be worth noting that the border tribes have now lost the art of weaving or very nearly so, as the little scraps of cloth they require, are procured in Asám ; while the Abors are able to weave very pretty, though coarse, pieces of party coloured cloth, as they cannot trade with Asám.

If it were possible to open broad, neutral avenues among these hills, to allow the remoter hill tribes a chance of getting into the plains, it would benefit all parties and injure none, and the Abors* would thus be our native allies. I may here mention that, even in the rains, five hours' dry weather after a week's rain leaves communications as they were before the rain. The water runs off as it falls, while in Asám we should have a month's 'boka,' or mud.

Both physically and linguistically, there is a good deal of difference in the tribes bordering each other. The Nágá vocabulary compiled by Mr. Bronson at Jaipur in 1840, is of no use here, but sixteen miles west, though some words are known ; but the numerals are different, and they here only count to ten.

* I have carefully enquired both among Asamese and Nágás regarding the Abors, whether they have a wish to visit the plains, and all without exception say, they are extremely anxious to do so. This of course is to be expected, as some of their most valuable articles, as iron, comes from Asám, though in small quantities and in shape of dháos. Asám to them is like a goal, always is sight, but never to be reached. They live in sight of the plains, at not more than a day's journey. They are born, live, and die, longing to cross a narrow strip of land, but cannot.

When once with a number of Banparas on the road, a large party of Nágás passed, and as neither party spoke, I asked who they were. I was pointed out their hill, and on asking why they did not speak, they said they would not understand one another. This I thought a good opportunity to try them, and told them to call them in Nágá and ask who they were. On being called to, they all turned round, and stopped, but said nothing; I then made them call again; but to no purpose, the other party simply jabbered together in twos and threes, and on calling them a third time as to where they were going, they shouted out a lot of Nágá which my fellows could not make out. Both parties passed on, unable to exchange a word, though living within a few miles of each other. A few words did pass, but they were Asamese. I asked how they knew the men, and they said "by their ák," or tattoo marks. There is more lingual variation among the remote tribes, I believe, than those bordering Asám, as the latter frequently meet in the plains on a peaceful footing, while the Abors are shut out from all intercourse.

The physique also varies with the tribe. I can as a rule tell a Joboka man from a Banpara, and these from a Múton, or Namsangia, and Asamese. Those who are familiar with the tribes can easily do so, without seeing the ák to guide them, simply judging by their general physique and colour. Of course there are exceptional cases, such as small stunted men, or others unusually tall or well made.

Practically, the extraordinary confusion of tongues opposes a serious obstacle to the explorer, and the sooner we set to work to reduce the confusion by inducing opposite causes, the better for us and our successors, and for them and their successors. Tattooing as a decoration, or prize for committing murder, is at the bottom of it all, I fancy, and is so deeply rooted, that it may take a long time to eradicate by peaceful means.

Their religion seems confined to the fear of a legion of deotás or devils, and has no system, and their devils are of course on a par with their limited ideas. Whatever they do not understand, is the work of a 'deotá.*' Every tree, rock, or path, has its 'deo,' especially *bor* trees, and waterfalls. If a man is mad, a deo possesses him, who is propitiated by offerings of dhán, spirits, or other eatables. Deos in fact are omnipresent, and are supposed to do little else than distress human beings. The only remedy is presents and counter witchcraft. They seem to have no idea of a Supreme Being, the idea is certainly not 'innate' here. There are no regular priests, though they have 'deorís,' men whose office it is to bury or attend to the dead. Two or more such men are in each village. They tie up the corpse

* I was once asked by a Nágá to point out which of two men had robbed him of three Rupees, and to use, for the purpose, a small horse-shoe magnet I had. He was under the impression that it was capable of pointing out moral delinquencies.

in tocoo leaves, and put it on the 'rúk túás,' where it is left till sufficiently decayed when the skull is put in the Morrang.

APPENDIX I.

Numerals used by the Banparas and neighbouring tribes.

<i>Banparas.</i>	<i>Mohongias.*</i>	<i>Namsangias.†</i>
1. eta	tumchee	vanthe.
2. annee	kinee	vanigie.
3. ajum	kahom	vanram.
4. allee	mellee	beli.
5. aggah	manga	banga.
6. arruck	torrong (k?)	irok.
7. annutt	tenjee	ingit.
8. atchutt	ashut	isat.
9. akoo	akoo	ikhu.
10. abbau	abau	ichi.

It is worth noting that the Banpara numerals all begin with *a*, except the first.

SPECIMEN OF A NAGA VOCABULARY.

<i>English.</i>	<i>Nágá.</i>	<i>English.</i>	<i>Nágá.</i>
Above,	dingko.	Arm,	tzuk.
Abode, n.	hum.	Arrow,	sán.
Across,	árem.	Ashes,	lábú.
Afraid,	ráh.	Asleep,	gíp.
After,	pai.	Aunt,	ániehum.
Aged,	árúpa.	Awl,	janmut.
Air,	rung tez.	Axe,	vá, or bá.
Alike,	tavei.		
Alive,	{ áráng. arang.	Babe,	{ mánsá. náusá.
All,	pang vei.	Back, n,	tawkí.
Alone,	kúra.	Bag,	nítzung.
Amber,	nása.	Bait, n.	púsen.
Ankle,	shiádúa.	Balance, n.	túak.
Angel,	hárung.	Bamboo,	nyud.
Animal,	mai.	Bandage,	káko.
Ant,	tziktza.	Bank,	túm.
Ape,	mainak.	Barn,	kúng.

* The Mohongias, or Bor and Pání Duárias, 8 miles east.

† The Namsangias are at Jaipúr, 16 miles east.

<i>English.</i>	<i>Nágá.</i>	<i>English.</i>	<i>Nágá.</i>
Basket, cage,	shawkshawu.	Bowl,	kup kwaw.
Bat,	pawkpi.	Box,	shwak.
Battle,	ron.	Boy,	náusá.
Bead,	lík.	Bracelet,	kapson.
Beak,	chukin.	Branch,	punchuk.
Beam,	langpang.	Brandy,	zí.
Bean,	píasá.	Bread,	án.
Bear,	tchupp.	Breakfast,	kongsaha.
Beat,	pít.	Brick,	há.
Bee,	ná.	Bridge, large,	váloh.
Beetle,	chong.	small ;	shái.
Before,	taut.	Brook,	shwása.
Bent,	kúm.	Buffalo,	lúi.
Bellows,	zetpo.	Bug,	veikoi.
Belly,	vawk.	Bull,	mai hopong.
Below,	hopong.	Bullet,	jantang.
Belt,	ropák.	Burial place,	rúktúa.
Best,	hánko.	Burn,	vun súng lei.
Betel,	kovai.	Butterfly,	pítúak.
Between,	hawtawng.		
Bird,	awe (as the Eng- lish 'awe').	Cable,	rú.
Bite,	chut.	Calf,	mai húsa.
Bitter,	ká.	Cane,	reh.
Black,	nák.	Cap,	kohom.
Blacksmith,	changlík.	Cascade,	tí kong lei.
Blanket,	ní.	Cat,	miásá.
Blind,	míkdok.	Cave,	hakon.
Blood,	adzi.	Chair,	tun tong.
Bloom,	mei púa.	Charcoal,	mák.
Boar,	vakla.	Charm,	vem.
Boat,	quánú.	Chicken, '	awsá.
Bolster,	kungtán.	Chief (Rájah),	vang hum.
Boil,	taw.	„ (subordinate),	vang sa.
Bone,	opák.	Chin,	kará.
Book,	tantung.	Chisel,	juntúp.
Bottle,	pei (as the Eng- lish 'pay').	Cholera,	mizi.
Bow,	háp.	Clearance (new), of land,	nau erra.
		Club,	punkum.

APPENDIX II.

The Asamese Koní Bih, or Poison Berry.

The seeds of this shrub or tree are used by the Asamese to kill and intoxicate fish in the rivers. They usually select the deep pools, after the floods have subsided, and stake both the outlet and inlet, so as to prevent the fish from escaping.

It seems that both the leaf and the bark are capable of poisoning, if used in any quantity ; but they are not used, because the seed (husk and all) is far more active. Some say the husks alone are to be used.

Fresh seeds are not selected, but rather old and half rotten ones, and I hear that if they have lain on the ground, they are still better. The custom is to collect them some days before the poison is required, and steep them in water. When soft they are pounded up, seed, husk and all, with some water, care being taken to protect the face and especially the eyes. When thoroughly reduced to a pulp, the mass is allowed to stand a day or two, and is then ready to be thrown into the stream a little above the place selected to catch the fish.

About 5lbs. of seed will poison a large 'dhubí,' and of course affect the stream a long way down. I hear that it is injurious to human beings, and stories were told me of people killed by it, but I doubt the fact. It seems universally agreed that if the seeds are kept for a long time in a pot, moistened and allowed to rot (? ferment), the poison is far more active, than if only kept a few days.

'Nági Bih,' another poison used to intoxicate and kill fish.

The tree known by this name grows to a large size, often 2, 3 and 4 feet in girth, and 50 to 80 feet high. Unlike the Koní Bih, the seeds must be used when rather unripe, or at least not old ; but all parts of the tree seem to yield the active principle, though the seeds contain most for a given weight. The poison is also most virulent if used immediately ; and for this reason, I suppose, it is the juice itself that is poisonous, and not any product of fermentation, as seems the case in the first poison. A larger quantity is also required to produce the same result. It is prepared much the same way as Koní Bih, that is, pounded up with water and macerated.

The outside of the husk is covered with fine hair or down. The seed case when cut through, rapidly changes from a light yellowish white to a dark greenish black in about a minute or less.

There are also other kinds of poison called 'Lota Bih' and 'Deo Bih,' the latter not known to the Asamese, I believe, and 'Bor Bih,' which is brought down by the Mishmís.

Note on Gharḡaon, Asám.—By J. M. FOSTER, F. R. G. S., *Nuzecrah, Assam.*

Gharḡaon, for many years the capital of the Ahom kings of Asám, is so little known, or cared for even by those acquainted with its existence, that it has been thought worth while to place a record of its appearance at the present date in the hands of those likely to appreciate such, as in all probability a few years more will see the place a heap of undistinguishable ruins, or worse still, converted into materials for building purposes. Time, neglect, the heavy rains of the country, and frequent earthquakes, have much injured this once noble pile of masonry; but strange to say, the hand of man has done but little damage so far, a few attempts to find hidden treasure by digging being the only mischief visible: the scarcity of inhabitants, the respect and awe with which it is regarded, may have served to protect it so far; but it is much to be regretted that so interesting a specimen of architecture should have been allowed to fall into such a state, that the abovementioned causes, and that curse of ancient Indian masonry, the Pípal tree, must inevitably complete its utter ruin before many years pass over.

The following extracts from "A Descriptive Account of Asam, by William Robinson, 1841" give a slight sketch of the founder and the history of the place.

P. 318. "Of the state of the district antecedent to the conquest of the Ahoms we know nothing. It was in all probability filled by an abundant Hindu population, from whom the bulk of the present inhabitants have descended. The Ahoms were for many generations confined to the tract east of the Dehing. As their power increased, their conquests extended beyond that river, on the left bank of which they founded their first capital Huluguri-nugur. About half-way between Jaipur and Dehing Mukh, extensive remains of the fortifications of the Nugur are still to be seen."

"On the further advance of their arms, the Ahoms removed the seat of government to Ghergaon on the banks of the Dikko, which continued to be the principal residence of the princes till the prosperity of the Ahom dynasty began to fade. The royal palace at Ghergaon was surrounded by a brick wall about two miles in circumference, but the whole town and its suburbs appear to have extended over many square miles of country. The ruins of gateways built chiefly of masonry are still to be seen within the fortified circumvallations which surround the town. It may be observed that one of the gateways is composed of stone, the blocks bearing marks of iron clampings, which evidently shows that they once belonged to far more ancient

edifices. From this evidence alone, were there no other, it might safely be presumed that, long antecedent to the conquests of the Ahoms, the country had been possessed by a race of inhabitants far advanced in some of the arts civilized life."

Ghargáon was for certain reasons subsequently abandoned, and Rangpúr, situated lower down the river and on its left bank, was fixed upon as the capital. In the troubled reign of Gornáth (1780 to 95), Rangpúr was abandoned for Jorhát, but even here, the Rájah was not safe, and he fled for refuge to Gaubáti. On Gornáth's restoration, Jorhát again became the seat of government, and continued so until the conquest of the country by the British troops (1826).

P. 163. "On the death of Sarga Nariyan, A. D. 1539, Chuckemung succeeded to the throne, (he is said to have instigated the assassination of the preceding Raja Chuhammung or Dihinaja Raja, or Sarga Nariyan). He is said to have built the town and fort of Gargaun, or Ghergong. He reigned thirteen years and was succeeded by his son Chuekampha. Nothing remarkable is recorded of him except that he enjoyed the throne for fifty-nine years in comparative peace and comfort."

P. 165. "In 1654, Chutunla succeeded his father Churumpha who was deposed and put in prison for imbecility. Soon after his accession, he adopted the Hindu faith and assumed the name Jaiyadhajia Singh. At the latter end of his reign, in 1651, the valley was invaded by Mir Jumla, the Subadar of Bengal, who sent up his stores and provisions in boats, but crossing the Bhrmaputra at Rangamati, marched his army by land. The march was tedious and on its progress the army was greatly annoyed by the Assamese. This added to the fatigue of dragging the boats, greatly affected the troops. The Subadar at length reached the capital Ghergaon, which, after a severe conflict, he succeeded in taking, and the Raja was obliged to take refuge in the mountains. The rains of 1662 set in with great violence, and the Raja issued from his place of concealment in the mountains and cut off the provisions of the Moguls. A pestilence also broke out in the camp which carried off many, whether they returned or remained they were equally exposed to death: in this miserable state they passed the rains, but no sooner was the country dry, than, according to the Musalman historians, they took courage and bravely repelled the enemy. The Raja is said to have solicited peace, which Mir Jumla was happy to grant, for he was himself attacked by disease and his troops were mutinous. The same accounts state that the Assamese were obliged to give 20,000 tolahs of gold, 100,000 of silver, and 40 elephants; and the Raja gave up his daughter to be married to one of the Muhammadan princes, and agreed to pay an annual tribute. The native annals on the contrary inform us that Mir Jumla's army was entirely defeated, and he was obliged to give up the whole of the

zillah Kamrup to the Assamese, which was from that time placed under the management of a great Assamese officer, the Barphukan, and formed a government equal to about a third of the whole kingdom. Jaiyadhajia Singh died in 1663.

"He was succeeded by Chupungmung who was assassinated in 1672. The latter was succeeded by his younger brother Sueklunpha who was secretly poisoned two years after at the instigation of the Bar Baruwa, who assumed a great degree of authority, although he had installed Sulung, the young prince of Samaguriya. The Queen objecting to the Bar Baruwa's usurpation, laid a plot for destroying him which he discovered, and despatched the king with his own hands, whilst his myrmidons assassinated the Queen and members of the Council. The young king reigned but one month and fifteen days. The Bar Baruwa next raised Teenkungiya to the throne; but the officers of Gowhatti with a body of troops proceeded to the metropolis, secured the Bar Baruwa, beheaded him and strangled the new Raja after a reign of twenty days. Chujinpha was then placed on the throne, who committed suicide in 1677. In 1699, Chuekungpha founded the city and fort of Rungpur (Sibsagar), and caused the extensive tank to be made which still bears his name. In 1770, the Moamarials captured Ghargáon, but it was recaptured five months later by the adherents of Luckmi Singh, who died in 1780. The Moamarials, in 1784, after some tremendous battles again captured the place, and the king, Chuhitpunghpa escaped to Gowhatti: after many changes of various kinds, the British Government sent a detachment to aid them in 1792, under Captain Welsh, who successfully put down the Moamarialh insurrection." The Burmese invasion, a matter of modern history, was finally suppressed by the British troops at Rungpur in 1825; since that date, the authority of the Assam Rajas has been at an end."

Another version, by a contemporary, of the invasion of Assam is to be found in an old work entitled, 'Particular Events, or the most Considerable Passages after the War of Five Years or thereabout, in the Empire of the Great Mogul,' Tom. II. By Mons. F. Bernier, London, 1671.'

P. 110. "Aurengzebe too well knowing that a great Captain cannot be long at rest, and that, if he be not employed in a Foreign War, he will at length raise a Domestick one; proposed to him to make War upon that rich and potent Raja of Acham, whose Territories are on the North of Dake, upon the Gulf of Bengala. The Emir, who in all appearance had already designed the same thing of himself, and who believed, that the Conquest of this Country would make way for his Immortal Honour, and be an occasion of carrying his Arms as far as China, declared himself ready for this Enterprize. He embarked at Dake with a puissant Army, upon a River which comes from those parts; upon which having gone about a hundred leagues North Eastward, he arrived at a Castle called Azo [Hájo], which the Rajah of

Acham had usurped from the Kingdom of Bengala, and possessed for many years. He attacked this place, and took it by force in less than fifteen daies; thence marching overland towards Chandara, which is the Inlet into the Country of that Raja, he entered into it after 26 daies' journey, still Northward: There a Battel was fought, in which the Raja of Acham was worsted, and obliged to retreat to Guerguon, the Metropolis of his Kingdom, four miles distant from Chandara. The Emir pursued him so close, that he gave him no time to fortifie himself in Guerguon: For he arrived in sight of that Town in five daies, which constrained the Raja, seeing the Emir's Army, to fly towards the Mountains of the Kingdom of Lassa, and to abandon Guerguon, which was pillaged as had been Chandara. They found there vast riches, it being a great, very fair and Merchant-like Town, and where the women are extraordinarily beautiful. Meantime, the season of the Rains came in sooner than usually: and they being excessive in those parts, and overflowing all the Country, except such Villages as stand on raised ground, the Emir was much embarrassed. For the Raja made his people of the Mountains come down from all parts thereof, and to carry away all the provisions of the Field, whereby the Emir's Army (as rich as t'was) before the end of the rains, fell into great straits, without being able to go forward or backward. It could not advance by reason of the Mountains very difficult to pass, and continually post'ed with great Rains: nor retreat, because of the late Rains and deep ways; the Raja having also caused the way to be digged up as far as Chandara: So that the Emir was forced to remain in that wretched condition during the whole time of the Rain; after which when he found his Army distasted, tired out, and half starved, he was necessitated to give over the design he had of advancing, and to return the same way he was come. But this retreat was made with so much pains, and so great inconveniences, by reason of the dirt, the want of victuals, and the pursuit of the Raja falling on the Rear, that every body (but he) that had not known how to remedy the disorder of such a March, nor had the patience to be sometimes five or six hours at one passage to make the Souldiery get over it without confusion, would have utterly perished, himself, army, and all; yet he notwithstanding all these difficulties, made a shift to come back with great honour and vast riches. He designed to return thither again the next year, and to pursue his undertaking, supposing that Azo which he had fortified, and where he left a strong garrison, would be able to hold out the rest of the year against the Raja. But he no sooner arrived there, but dysentery began to rage in his army. Neither had he himself a body of steel more than the rest; he fell sick and died, whereby fortune ended the just apprehensions of Aurengzebe. I say the just apprehensions, for there was none of those that knew this great man, and the state of affairs of Industan, who did not say: "Tis this day that Aurengzebe is king of Bengala."

In a work styled 'Tales of Shipwrecks and Adventures at Sea, London, 2nd Edit., 1852,' at page 705, under the heading, "Loss of the 'Ter Schelling,' including the various calamities of the crew, during an unfortunate voyage to Bengal in 1661," we find the following record of the progress of the Emir's army in Assam as related by some Dutch sailors who went to Ghargáon. The 'Ter Schelling' left Batavia for Bengal on the 3rd September, 1661, in company with two other vessels. On the 18th October, they sighted the coast of Bengal, parted company, got caught in a heavy storm, and struck several times on the sandbanks in the Sunderbans. They were finally wrecked, and the crew suffered great privations on the desert islands. Ultimately, eight of the crew (Charles Dobbel and seven others) left the islands in a boat, and travelled for many days, until picked up by some of the natives who took them to a village after plundering them of all money, &c. The 'Governor' treated them kindly and forwarded them to Bolwa [Bhaluah]. The narrative will be best continued in the original text. 'The night following they arrived at Assam [?], a poor despicable place that afforded nothing. Here they sent back the three barques and hired another as far as Bolwa. At two leagues' distance from this village, their guides set them on shore, and made them walk the rest of the way. Whilst these guides went to the governor to give notice of their arrival, our adventurers bought milk and rice, which they dressed in a pot that was sent them by Moors, that spoke the Portuguese language. It was nearly ready when their guides returned, and told them they must come immediately to the prince, who sent for them. This news displeased them, for their appetites were very keen; however they took the pot, and carried it by turns to the prince's palace gate; where they eat what was in it before they entered. They were at length brought to their lodging, and, by the prince's order, served with an excellent kind of meat called *brensie* [harisah,?] which is only seen here at great men's tables. This was such a nourishing food, that in three or four days they recovered their full strength. In a day or two after, the prince sent them word that they might go where they pleased, the barques being ready. This being their desire they parted an hour after, and happily arrived at Deeka. The factory received them very kindly, to whom our adventurers imparted their whole story.

"The governor now caused a barque to be ready to transport them to Ongudi [Hight], where the Dutch have also a considerable factory. But an hour before the appointed time of their departure, the governor received a letter from the Great Mogul's general, in which he enjoined him to send them to him. This order they were obliged to obey, though contrary to their inclinations; for this general threatened, in case of refusal, to seize upon all the Dutch in his master's kingdom, and make them slaves. They travelled thirty days together, sometimes by land, and sometimes by sea, passing by se-

veral cities made desolate; the inhabitants of the country being wont, in time of war, to leave their houses, in order to follow the army wherever it marched.

“On the thirty-fifth day they went on board one of the vessels belonging to Nabah [the Nawáb], where they found four Englishmen, some few Portuguese, and two of their own party. From thence they went and cast anchor near the city of Benguenati. In a short time they landed and were entertained in the army of the Great Mogul. The general, whom they saluted in his tent, seemed glad to see them, and immediately ordered a large cup of arrack, that they might drink his health. The cup was so closed that it was a difficult matter for them to open it; and therefore the general ordered it on purpose, to divert himself with their embarrassments. Every one endeavoured to open it, but to no purpose; at last one of the party finding it was made of wood, made a hole in it with the point of his knife, and being brim-full the arrack sprung out abundantly. By this means they all drank of it; and it being a very strong liquor, they were soon intoxicated.

“The next morning the General sent them three hundred rupees, and assigned them certain vessels called gouropes [غروب *ghrâb*], one of which carried fourteen guns, and about fifty or sixty men. Each gourope was attended with four kosses, كوسه *kossah*, which are boats with ears, to row great vessels. There were also several great flat-bottomed boats which carried no masts, but were well furnished with guns. The greatest part of the officers were Portuguese. There were several other vessels laden only with provisions and ammunition. As soon as they were ordered to march, our adventurers sought the vessel which was assigned to them; but, in the great multitude of people, two of them unfortunately went astray, and were eight days without knowing where to betake themselves. After a long march, these two wanderers entered Kosbia [Koch Bihár], a country lying between Bengal and Azo [Hájo].

“The Great Mogul’s general was at war with the king of Azo, and at this time subdued him. Our two adventurers expected a share of the plunder, but were disappointed. This was exceedingly mortifying to them; their wages, which were no more than ten crowns a month, being insufficient to maintain them, on account of the then dearness of provisions. The reason that they had no more was, because they served in the army by constraint, whereas those who served voluntarily had twenty-five crowns each per month.

“Immediately after the overthrow of the king of Azo, the general hastened to attack the countries belonging to the king of Assam; and lest the floods, which every six months overflowed the greatest part of the kingdom, should frustrate his designs, he advanced with great expedition, and arrived before that time at the place he intended.

"In the mean time our two adventurers, and the English who belonged to the army, having observed all the signs of an approaching tempest, carefully repaired their vessels. These precautions, however, were unavailing; the vessel in which were our two adventurers, not having been properly ballasted, was overturned by the currents, and four Dutchmen and twenty-four Moors perished. Both our heroes, after swimming several hours towards land, had the good fortune to be assisted by an English vessel, which took them on board. The next morning they thanked their benefactors and went to the army, where they sought an occasion of admittance to the general. As soon as he heard of the loss of the vessel, he fell into a violent passion, and commanded them to withdraw and choose what other vessel they had a mind to.

"In two days after, their admiral set sail in search of the enemy, attended by the whole fleet. Although the wind was little favourable to them, the vessel which our adventurers entered, followed on the course, and three or four hours afterwards dashed against a rock, which struck off their helm. Not long after, they discovered the enemy's fleet, consisting of six hundred sail. As soon as the enemy perceived them, they advanced, and a smart encounter ensued. They took three hundred of the enemy's vessels, the least of which carried seventy men; and of this whole number there did not escape above fifty. The three hundred vessels that escaped, unhappily cast anchor at about a quarter of a league's distance from the general, who advanced up the country with all possible expedition. Having brought near three hundred pieces of cannon, he planted them against them, and sunk the greatest part of them; the rest passed over to the other side of the river, and were pursued by the general's vessels with success.

"After this pursuit, their admiral cast anchor before the city of Lokwa, situated about six leagues from Gueragon. They were obliged to stay here about three months in consequence of the flood: as soon as the waters were sufficiently fallen, they quitted their post. Having been fifteen months in the Great Mogul's army, by the mediation of their consul, our adventurers at length obtained their discharge, and prepared for their departure. In fifteen days they came to Deeka, and thence took shipping for Ongueli. Having sailed about one hundred and twenty leagues along the river, they made some stay at Cazimabahr [Qázim izár, near Murshidábád], a place famous for silks. From thence they returned to Ongueli, where each betook himself to different employs, and it was not till 1673, that the last of our adventurers was enabled to return to his native country."

The palace of the Rájahs in Gharghôn is situated nearly in the centre of a large enclosed space about a mile from the Dikho river, and nine miles east of Sibságar (Rangpúr). The surrounding 'bund' is some fifteen feet broad on the top, and about eight feet high, but considerably more on the outer face where an enormous ditch exists all around, some forty feet wide and

of various depths, made probably to provide materials for the wall as well as assist in the defence of the place. The core of the bund is said to be brick, and is covered with earth, now overgrown with forest trees. Here is also another bund, (query, an outer line of defence) some four or five miles outside Ghargáon proper. There are numerous traditions respecting the enclosed land; one that none but the better families were allowed to reside within it; another story tells us that the bund was planted with dense hedges of bamboos (hence its name Bānsгарh), and this enormous tract of country was used as a preserve for wild elephants; another that it was the private property of the Rājah, and that no one could exercise judicial powers within it but the Rājah himself; whilst some think, it is merely a coincidence, and this bund was simply a road (as it is in many parts at the present date) that may have been constructed before or about the time Ghargáon was adopted the capital. The Romans have the reputation of being the masters in the art of road-making, but their efforts seem small when compared with the network of enormous bunds intersecting this country in all directions, and made absolutely from mud alone, no other materials being procurable. The same neglect which has allowed the historic monuments of this country to fall into ruins, is very perceptible to any one who has the misfortune of being obliged to travel over these once magnificent roads during the wet season.

Reference is made to Chamdara in the account of Mír Jumlah's advance, by Mons. F. Bernier: this place will be seen marked about five miles from Ghargáon on the road to Sibságar, where the road cuts through the Bānsгарh, and is still known by its ancient name. The gateway there, with an immense amount of fine carved stonework, has been utilized for building purposes by the Public Works Department. The road from Ghargáon to this spot is very different to the 'Rājah' roads, and seems never to have been properly repaired since dug up to annoy the enemy's troops in 1662. The city of Lokwa (Lukwah) mentioned in the sailor's narrative, is some sixteen miles from Ghargáon, on the Rājgarh: not a brick is to be seen there now, the place is at present a tea garden; a portion of Mír Jumlah's fleet must have gone up the Desang upon which Lukwah is situated, and probably a portion of the forces marched down the Rājgarh to invest Ghargáon on the east, whilst another portion of the fleet and army went of the Dik'ho, landing about where Rangpúr (Sibságar) now stands, to attack on the west; for it seems highly improbable that the whole of the forces could have gone up the Desang to attack Lukwah, when the Dik'ho route to Ghargáon was nearer, more practicable for both fleet and army, and had water communication to within gunshot of Ghargáon itself, whilst Lukwah was at least sixteen miles distant.

The stone gateway mentioned by Robinson, the guard houses, and other brick buildings in the enclosed space at Ghargáon have all disappeared since

1866; the bund is overgrown with forest; the ditch in many places filled with rank vegetation, and the enclosure itself a mass of dense jungle. The palace, as before mentioned, is rapidly crumbling away; in 1869, the north-west front consisting of two verandahs fell in, the balustrades in many places are gone, huge cracks gape in every direction, the rain finds its way from top to bottom of the building, and although the plans shew that it is of the most massive construction, it is hardly safe for a visitor to mount to the summit. Some twenty years since, it was temporarily occupied by some tea planters who are said to have made slight repairs; they are also credited with having found a sword having a silver hilt, and an ivory and gold sheath, besides other valuables.

The so-called palace itself may be described as a quadrangular pile of brickwork consisting of three stories above ground, and two subterranean ones. The surface of the soil being very soft and liable to inundations from the Dik'ho, an immense mass of boulders was placed there, upon which the palace was erected, some ten feet above the level of the surrounding country. These boulders were probably procured from Santok Mukh, about twelve miles from Gharadon, up the river Dik'ho, that being the nearest place where they can be found. The subterranean chambers have been visited of late years, but presented nothing of interest, and at the present date are hardly accessible from fallen brickwork, &c. The building has cupolas at the angles and a terminal one at the summit in the centre; the openings on to the verandahs are generally arched, frequently cusped: all the decorations are in stucco, and although cut or carved bricks have been found in the immediate vicinity, not one is visible in or on the palace itself. This is singular, as cut bricks seem to constitute the chief ornaments of the old Asamese buildings in this district. The walls and piers are very massive, and the openings generally small. The general design seems more ornate than useful, and it is apparently as much a temple as a dwelling or palace. The bricks, or rather tiles, of which it is entirely composed (not a particle of wood or stone being perceptible) are extremely hard and frequently bear a polish, and are seldom of the same thickness and superficial measure, a fair specimen $8'' \times 10'' \times 1\frac{1}{2}''$. In one verandah the ornamented stucco has fallen off in places disclosing an under layer of the same material having the same pattern but on a slightly smaller scale. The plans and photographs will give a far more correct idea of the peculiarities of the building than any written description can supply. The buildings near the palace were standing some three years since, and consisted of a large square room, said to have been a room for holding nautes in, and a long arched passage-like building of which it is impossible to conjecture the use. Remains of brickwork some three hundred yards from the palace lead to the conclusion that there might have been a brick wall surrounding it at that distance, but the dense jungle

renders it impossible to follow it up. There were several large tanks also within the enclosure, of which but one remains in good order. The remains of a bund surrounding what might have been a fruit garden has also been noticed.

A very curious tradition respecting the builder of the palace is current amongst the natives. A Bangálí architect named Gonsam was invited by the Rájah Chackemung to construct this palace. Wishing to obtain for his Rájah in Bengal all particulars as to the strength and population of the country, he suggested that in making the bricks they should be mixed with the white of eggs to render them harder. On Chackemung enquiring where such a vast number of eggs could be obtained, he intimated that if every one in Asám gave two eggs each, he would probably have sufficient for his purpose. The order was accordingly given, the eggs provided, and secretly counted by the builder. Unfortunately for him, the Rájah was quite alive to the stratagem, and when the building was completed, dismissed him and his assistants with great praise and riches. They were escorted across the river to be conveyed to Dík'ho Mukh by road (the Bor Allí); but immediately they got as far as Nazirah, they were attacked, made prisoners and beheaded on the spot, and the treasure returned to the Rájah.

The importance of this place during the seventeenth and eighteenth centuries can be judged from the immense number of ruined temples, vast tanks, enormous maidáns, and the once magnificent roads and river bunds; it is now but sparsely populated, and the greater part of the country is one enormous jungle. The district is well worthy of a visit by some competent antiquarian, to rescue from oblivion archaeological treasures that are now rapidly perishing from neglect and wilful destruction, and would amply repay the time and labour spent upon a thorough investigation of its many art treasures and historical monuments.

Translations of selected portions of Book I. of Chand Bardai's Epic.—By
JOHN BEAMES, B. C. S., M. R. A. S., etc.

After the severe strictures passed on my translation of the 19th book by Mr. Growse, (which, however, he subsequently retracted) I think it necessary again to point out that in a poem constructed like this, absolute accuracy of translation is impossible. The lines generally consist of a string of crude forms of nouns without any inflectional terminations, or signs of case. In languages destitute of such grammatical formations, the order of words in a sentence often supplies the requisite clue to the meaning. This is not the case with Chand. His words, if taken in the order in which they stand, often yield no meaning at all. In some cases turn the words as we may, it is not easy to make out any clear sense. The verbs when they occur do certainly exhibit some signs of tense; thus we have the singular masculine of the preterite in *-gan*, the feminine in *-i*, the plural masculine in *-e*, the plural feminine in *-ā*; but more frequently all tenses and persons are rudely expressed by the indefinite participle in *-i*, as *kari*, *dekhi*, which serves alike for past, present, and future time.

There are two other difficulties. Archaic words which neither occur in the modern languages, nor can be traced to any known Sanskrit root; and the insertion of arbitrary letters to eke out the rhythm, such as *ta*, *sa*, *ha*, which have no meaning whatever.

When to all this is added the extreme difficulty of dividing the words, I think I am not asking too much from critics, if I request that they will confine themselves to politely stating that they think I am mistaken; instead of at once taxing me with ignorance of a language which I have studied for fourteen years, and whose difficulty I appreciate as much as any one can.

I have recently learnt from a missionary at Ajmir that even the professional bards of that place admit their inability to understand more than the general drift of Chand's poems.

The secret of this loose careless archaic patois will only be discovered, when our researches into the vast and ancient language of which it represents one phase have been established on a firm footing. To that end some few of us are devoting our spare time. The following efforts at a rendering are perhaps premature, but even so they may yield some fruit of assistance to the greater task, and may even prove in some sort a guide to those who in time to come may approach the subject with a better *apparatus criticus* than we possess at present. The Latin and Greek scholars of the fifteenth century knew very little compared with those of the present day; yet the world is not without some debt to Erasmus and Reuchlin, or even to

their learned predecessors. Put me and my contemporaries as low as you will in the scale of scholarship, yet it must be admitted that we are making a beginning, upon which the better furnished scholars of the future will perhaps be not ashamed to build.

1st Selection.—THE OPENING OF THE POEM. STANZAS 1—13.

First, Sâtak metre. Om!—

1. First reverently bowing, bowing, the poet adores the feet of the Gurus.

(Taking) refuge at the feet of the highest, the afforder of support,¹ the husband of the opulent Lachhi;

(Who) stands the lord of vice and of virtue, consuming the wicked, the lord of heaven, blessing with success;

(Who is as) sandalwood to the life of living beings moving on the earth, lord of all, bestower of blessings.

2. Vathûâ metre.

First the very auspicious root is to be celebrated.²

Irrigated with the water of the truth of tradition,
Religion, (like) a fair tree with one trunk sprung up
With thrice six branches rejoicing the three worlds,

Leaves (of various) colours, leaves (like) mouths, there were³
Colour of flowers, and weight of fruit (it had)
Speech unfailing, princely,
Rejoicing with fragrance the sight and touch
A tree of hope to the parrot (-like) poet.

3. Kavit.

First having indeed proclaimed a blessing

Having honored⁴ the sacred writings, (whose) beginning (is) the Veda,

(Whose) three-fold branches, in (all) four directions

(Are) possessed of colour, and leaves (like) letters

Religion having sprouted (out through) the bark

Flowered fair in (all) four directions

Its fruit, (virtuous) deeds,⁵ springing out

Immortal, dwelling amidst mortals

(Firm as) counsel of kings, (or as) the earth, the wind shakes it not

Giving to life the flavour of nectar,

The Kali (yuga) affixes no stain to it

Containing truth, wisdom, and (perpetual) freshness.

4. Kavit.

Taking possession of the earth (like) a garden plot

Irrigating it with the fullness of the Veda, as with water

Placing in it good seed⁶

Upsprung the shoot of knowledge

Combining branches of three qualities
 With leaves of many names, red as earth
 It flowered with good deeds, and good thoughts
 Complete deliverance, union of substances
 The twice-born of pure mind have experienced the flavour of perfect
 wisdom
 A banian tree of delight, spreading abroad virtues,
 The branches of (this) excellent tree in the three worlds
 Unconquered, victorious, diffusing virtues.

5. Bhujanga prayāta metre.

First be the well adorned Bhujangi⁷ taken
 Whose name this one, is spoken in many ways
 Second, betaken the god, the lord of life
 Who placed the universe by powerful spells on Seshnág.
 In the four Vedas by the Brahmans the glory of Hari is spoken,
 Of whose virtue, this unvirtuous world is witness.
 Third, the Bháratī Vyása spake the Bháráth,
 Who bore witness to the more than human charioteer.⁹
 Fourth Suka deva at the feet of Parikhít
 Who extolled all the kings of the race of Kuru
 Fifth * *
 Who placed a six-fold necklace on the neck of King Nala.
 Sixth Kalidasa, fair of speech, fair of wit
 Whose speech is that of a poet, a master-poet fair-speaking.
 Who made the pure fragrance of the mouth of Kali,
 Who firmly bound the dyke of three-fold enjoyment.
 Seventh, Dāṇḍa malī's charming poem
 The wave of whose wit is as the stream of Gangá.
 Jayadeva eighth, poet, king of poets
 Who only made the song of Govinda;
 Take all these poets as thy spiritual guide, Poet Chand,
 Whose body is as a sacrifice inspired by Devi.
 The poets who have uttered praises and excellent speech,
 Of them Poet Chand has spoken highly.

6. Duha.

The speech in verse of Chand, excellent.
 Hearing him utter, his wife (says)
 Purifier of the body, O poet,
 Uttering excellent speech.

7. Kavit.

Saith the wife to her husband.
 Purifier of offspring, great poet,

Uttering spells and charms,
 Like an oblation offered to Devi,
 Hero of spells, very terrible,
 Giving pleasure to kings by thy poetry ;
 The childish sports, one by one,
 Of the gods having extolled in thy poems,
 Having uttered unchecked speech,
 From which to me (comes) wisdom,
 That word which is the visible form of Brahm,
 Why should not the best of poets speak it ?

8. Kavit, Chand's speech.

To his wife (saith) the bard
 Chand, muttering soft and low,
 That true word of Brahm,
 Purifier of (all) others itself pure,
 That word which has no form,
 Stroke, letter, or colour,
 Unshaken, unfathomable, boundless,
 Purifier of all things in the three worlds,
 That word of Brahma, let me expound
 The glory of the Gurus, pleasing to Saraswati,
 If in the arrangement of my phrases I should succeed,
 It will be pleasing to thee, O lotus-faced one !

9. Kavit, Chand's wife's speech.

Thou art the poet, the excellent bard,
 Gazing on the heavens with unclouded intellect,¹⁰
 Skilful in the arrangement of metres
 Having made the song of the Peacock-youth ;¹¹
 The wave of thy wit is like Ganga,
 Uttering speech immortal, soft
 Good men hearing it are rejoiced,
 (It) subdues like a spell of night.
 The incarnation King Prithiraj the lord,
 Who maintained the happiness of his kingdom,
 Hero, chief of heroes, and all his paladins,
 Of them speak a good word.¹²

10. Kavit, Chand's speech.

To her of the elephant-gait, Chand
 Singing a pleasant rhyme (said),
 Ravisher of the soul, tendril of enjoyment,
 Possessing the fragrance of the ocean of the gods,
 (Thou) of the glancing eye, in the flower of thy youth,

Beloved of my soul, giver of bliss,
 Wife, free from all evil qualities,¹³
 (Thou) who hast obtained the fruit of the worship of Gauri.
 As many poems as there have been from first to last
 Consider how endless a string (there is) of them,
 The description of this matter (is in) many books,
 Thus having taken in the best counsel.¹⁴

11. Paddhari metre.

First reverencing my first of gods
 Who uttered the imperishable word Om!
 Who made the Formed out of the Formless,
 The will of his mind blossomed and bore fruit,
 The sheen of the three qualities, inhabiting the three worlds,
 Shining on gods in heaven, men on earth, serpents (in hell).
 Then in the form of Brahma leaving the Brahma-egg,¹⁵
 The lord, the essence of truth said the four Vedas,
 The creator uttered them, unwritten,
 Without qualities, having neither form nor line,
 He who made the heaven, earth, and hell,
 Yama, Brahma, Indra, the Rishis, and guardians of the worlds,
 Winds, fire, clouds, ether,
 Rivers, ocean, earth, mountains, and their inhabitants,
 He created eighty-four lakhs of living beings
 I cannot come to an end of the description of them.
 He made a tendril of eighteen colours,
 Of various kinds, subject to all qualities.
 No one can resist his commands,
 Placing the order on his head (one) bears grief in the body.
 Day by day the sun-god when night turns to dawn¹⁶
 Rises; this comes to pass by force of the lord's command.
 The moon every night obedient to order
 Rises in the sky, being without division,¹⁷
 The guardians of the regions remain patiently pressed down by the
 earth,
 Their joints do not ache though they remain firmly pressed.
 He appoints to the wind its measure and the place of its going,
 It neither exceeds nor falls short, makes joy to the body.
 Indra's heaven, clouds, and sky (obey his) order,
 He makes the rain to rain joyfully.
 Firm and immoveable remains the earth (like) the glory of the lord,
 It cannot shake or move for an instant in distress.
 The wave rising touches the sky,

On the brink of the ocean there remains no trace of it ;
 Having obtained its limit, not one (wave) passes it,
 It advances only so far as the lord's command (allows).
 His order no one can refute,
 Neither in the past, nor in the future, nor in the present.
 The Veda describes Brahma as illimitable,
 Filling the water and land he remains in every material object.
 Then spake Vyasa eighteen Puranas.
 Arranging the incarnations in various order
 He describes with clear intellect every god,
 He searched out all of them, he did not confound their character.
 Then Valmiki, the incarnation of Ram,
 Related in a book of a hundred krores (of lines) essence of truth.

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* 18

The mighty bear, the story of the friendly monkey
 Again five poems five poets made,
 Placed a light in the breasts of ignorant men,
 In a few words wisdom is shown,
 I might make a boast, then you would laugh.

12. Duhâ. Hearing the poem of Poet Chand,
 Delighted in her mind, his wife (says),
 Thou art the poet, the charming poet,
 Laughing being prevented.

13. Kavit. Quoth the intelligent wife.

Thou who hast spells on thy tongue—ocean of spells
 Excelling in the description of witness
 Like the shining moon
 Thou bestower of heavenly blessings,
 Grant a gift to me, O poet !
 The eighteen Purânas
 Their names and quantity all ;
 Thou telling the tale joy (will be) to me,
 Past and future existences will be purified,
 The darkness of ignorance is destroyed by hearing this,
 The filth of (spiritual) blindness is removed from the heart.

Whereupon Chand in a long Kavit recites the names of the Puranas
 and number of lines contained in each.

It is not worth translating.

Notes to 1st Selection.

1. Or "supporting the earth," if धारण be meant for धरणौ, which is quite possible.
2. This line is extra-metral, and is probably meant as a note.
3. A conjectural rendering, which does not satisfy me. I can propose no better.
4. I read संपूजय. Another reading is संपजय, which seems to have arisen from an omission of the vowel by the copyist.
5. क्रम — कर्म.
6. This strange line I read as if for बोज सुभ लभ्य सध्य.
7. I do not know what the allusion is here.
8. These words are probably a corruption, उत्तपारथ सारथ being for उत्थायिन, more than earthly, from उत्त, over, and पृथिवी, earth, and सारथिन charioteer. It is an allusion to Krishna's acting as charioteer to Arjuna in the great war.
9. I cannot understand this line.
10. Of the many senses of नाक, the one here given is the only one that will yield any meaning.
11. This seems to be an allusion to the Sanskrit poem called Kumâra Sambhava, or the "Birth of the Wargod" Kartikeya, whose emblem is the peacock. Chand may have written a paraphrase of that work, as he seems to have been well acquainted with Sanskrit literature.
12. गलह is still the common Panjâbî for "a word." Many of these Panjâbî words occur in Chand, which is natural, as he was a native of Lâhor.
13. Literally, wife without the quality (निगुन *i. e.*, unqualified by)—of गरु अगन, heavy, bad qualities.
14. I do not pretend to understand what the poet means by these four lines, which I have translated as literally as I could.
15. I read ब्रह्माण्ड चारि (for चाडि), but there is another reading ब्रह्मा उवारि, which is not intelligible. उ and ड are often written for one another in the MSS.
16. रजनि भार, literally 'dawn of night,' which would convey a different meaning to our minds.
17. कलाहिन, having no Kalâs, or the 16 digits into which the moon is divided.
18. This line is not intelligible, it contains some allusion to Sita's rape, but the meaning is not clear.

(To be continued.)

Koch Bihár, Koch Hájó, and Ásám, in the 16th and 17th centuries, according to the Akbarnámah, the Pádisháhnámah, and the Fathiyah i 'Ibriyah.—By H. BLOCHMANN, M. A., *Calcutta Madrasah.*

The beginning of Aurangzib's reign is marked by two expeditions which led to a temporary occupation of territories beyond the frontiers of Eastern Bengal. Not only had the gradual retreat of Prince Shujá' from Akbarnagar (Rájmahall) to Dháká and Chátgánw (Chittagong) given rise to the maintenance of a large army, consisting chiefly of troops recruited by the officers themselves, which might conveniently be employed to settle several frontier disputes of long standing, to invade Rukhang (Aracan) and recover the children of the lost prince, but Aurangzib found it also absolutely necessary to give employment to generals on whose military experience, the result of the wars of succession, he looked with unconcealed distrust. Dáúd Khán's expedition to Palámau, of which the particulars were given in last year's Journal, occupied the Bihár corps; and Mir Jumlah Mu'azzam Khán, the '*Yár i wafádar*,' or faithful friend of the throne, received orders to use his army and extend the imperial dominions in the north along the Brahmáputra, and in the south along the eastern shores of the Bay of Bengal. In the expedition to Ásám, which is related below, the furthest point to which the Mughls advanced, is marked by the intersection of 95° Long., and 27° Lat., *i. e.*, the district north of Sibságar and Nazirah (the old Ghargáon) in Upper Ásám; and in the expedition to Aracan, which was undertaken after Mir Jumlah's death, the most southern point is Rámú, or Rambú, between 21° and 22° Lat., half way between Chátgánw and Akyab. Beyond these two points the Muhammadans did not advance. We have no particulars of any expedition led by the old kings of Bengal against Aracan; Ásám was invaded about 1500 by Husain Sháh of Bengal, the scanty narrative of the expedition forming an interesting page in the description given by the Persian historian of Mír Jumlah's invasion.

The south-eastern frontier of Bengal up to the time of Aurangzib was the Phání (Fenny) River, Bhálual and Nawák'háli being the most easterly '*thánahs*' of Sirkár Sumargáon. The *Xín i Akbari*, indeed, includes Sirkár Chátgánw in Bengal; but there is no evidence that the Mughls ever obtained a footing east of the Phání River before the annexation of Chátgánw under Aurangzib. The frontier then passed along the western portions of Tiparah as far as Silhat and Latú, went then westwards along the southern skirts of the Khasiah, Gáro, and the Karibáí Hills, Hatsilah* on the left

* Rennel spells the name Hautchella, and places it opposite to Chilmáí on the right bank of the river. I cannot find the name on modern maps. Latú is spelt Láqú in the *Xín*.

bank of the Brahmáputra being looked upon as a frontier town, and then along the Brahmáputra as far as the Parganah Bhetarband, at the confluence of the Sankos and the Brahmáputra rivers. From Bhetarband the frontier passed westward to Pátganw and the northern portions of Sirkár Púrniah. The Morang, Koch Bihár, and the districts at the angle of the Brahmáputra lay beyond the empire.

The countries bordering on the Mughul empire in the N. E. of Bengal were Koch Bihár and Koch Hájo. The latter is called by old English travellers 'the kingdom of Azo.' The position of Koch Bihár is sufficiently known; even in the reign of Jahángir it did not extend eastward as far as the Brahmáputra. Koch Hájo almost coincides with the modern district of Gwálpára. Lower Ásam, extending from above Hátsilah in the Karibári Hills and Parganah, on the left side of the Brahmáputra, along the bend of the river to Gwálpára. On the right side, it commenced north of the Parganah of Bhetarband and contained the districts along the angle of the river as far as Parganah K'hont'hag'hát inclusively, with the towns of Dhubrí and Rangimáti. On the east Koch Hájo bordered on Kámrúp, or that part of Ásam which lies between Gwálpára, and Gauhatti to both sides of the Brahmáputra.

The comparatively recent time of the advance of the Muhammadans in these districts explains the paucity of Muhammadan names of towns in Koch Hájo. The maps give a Parganah 'Mukrampore,' bordering on Bhetarband, which, no doubt, is a corruption of Mukarrampúr, so called after Mukarram Khán, the conqueror of Hájo in the reign of Jahángir. The parganah Golah 'Álanganj' with Rangimáti as chief town, where the Imperial Faujdár had his head quarters, reminds us of 'Álangir; and on the left side of the Brahmáputra, north of Karibári, lies the Parganah Aurangábád, which also reminds us of Aurangzib. But these few Muhammadan names refer all to localities in the immediate vicinity of the old frontier of Bengal. From the absence of Muhammadan names we may conclude that the invasions of Koch Bihár and Ásam by several Bengal kings as Husain Sháh and Sulaimán i Kararání, in the beginning and the middle of the 16th century, led to no permanent results.

Kámrúp also, for a short time under Sháhjahán, was included in the Dilli empire, and had imperial Faujdárs whose head quarters were Gauhatti. As in other parts of Bengal, the Muhammadans established settlements of Páiks, who are defined as a sort of militia, armed with spears and shields. But the Governors of Bengal soon found that they could not trust them as a border defence; for in the Hájo and Asamese wars they generally took the side of the Ásam Rájahs.

I now proceed to collect the notes given in the works of Muhammadan Historians on Koch Bihár, Koch Hájo, and Ásam. The notes are chiefly taken from the *Akbarnámah*, the *Tuzuk i Jahángírí*, the *Pádisháhnámah*,

the *ẖāṭir-nāmāh*, and the *Fathiyah i 'Ubrighah*. The first four works are sufficiently known; but the last mentioned work requires a few introductory remarks.

The *Fathiyah i 'Ubrighah* is also called *Tārīkh Fath i Āshām*, or History of the Conquest of Āsām. It was written by Ibn Muḥammad Walī, or Shihābuddin Talish, between the 4th Muharram and the 20th Shawwāl, 1073, A. H., or between the 9th August, 1662, and 13th May, 1663, A. D. We know very little about the author. He was in the service of Mir Muḥammad Sa'id of Ardistan, better known to European historians under the name of Mir Jumlah, Khān Khānān and Governor of Bengal in the beginning of Aurangzib's reign, and accompanied the general, apparently in the position of a clerk, on his expedition to Āsām in 1662, and returned with him to Bengal. His brother Muḥammad Sa'id, too, held an inferior office during the expedition. In the preface the author states that the reports which the imperial Wāq'āhnawises used to send to Court, were often in the opinion of Mir Jumlah defective and incorrect: hence the object of the author is to give a detailed and faithful account of the whole expedition to Āsām up to the death of Mir Jumlah, with which the book closes. The office of Wāq'āhnawis, or writer of events, had been introduced by Akbar: his duty was to report to Court whatever happened in the district to which he was appointed. Before the time of the Mughals also the office existed, though reports were not so systematically forwarded, as from the time of Akbar. In the *Tārīkh i Firāzshāhī*, for instance, we find the word *barīd*, an Arabic corruption of the Latin *veredus*, used instead of 'Wāq'āhnawis.' Dr. Fryer, who was in India from 1672 to 1681, in his most interesting 'New Account of East India and Persia' (London, 1698), calls these officers 'Public Notaries,' or 'Public Intelligencers,' and has the following remark (*loc. cit.*, p. 140).—'This cheat [he means the practice of false muster-] is practised all over the Kingdom, notwithstanding here are Publick Notaries placed immediately by the *Mogul*, to give Notice of all Transactions: which they are sure to represent in favour of the Governors where they reside, being Paid by them, as well as paid by the Emperor: so that if a Defeat happen, it is extenuated; if a Victory, it is magnified to the height: Those in this Office are called *Vocanoveces*.'

On comparing the account of Shihābuddin with the shorter account of Mir Jumlah's expedition in the *ẖāṭir-nāmāh*, which contains a history of the first ten years of Aurangzib's reign and was issued with the Emperor's permission, we find a remarkable coincidence in language and phraseology. Whole sentences, in fact occur word for word in both books; and we are led to conclude that the author of the *ẖāṭir-nāmāh* either used Shihābuddin's account, or both had access to the official reports which were sent to the Emperor. I shall notice this circumstance below.

* Vide Kín translation, p. 258.

In point of style, Shihábuddín's work is elegant and simple. The Persian is flowing and pure, and the total absence of Indian *istimál*, or Indo-Persian constructions, shews that the author was a native of Persia.

The book* consists of a short preface, an introduction (*muqaddimah*) and two parts (*maqilah*). The introduction treats of the causes which led to the invasion of Koch Bihār and Āsām. The first part relates the conquest of Koch Bihār and the general condition of the country. The second part narrates the invasion of Āsām by Mír Jumlah; the occupation of the country, which lasted for fourteen months, from the 23rd Jumada I, 1072 to the 26th Rajab, 1073; the peace which was concluded; and the return of the general to Khizrpur near Dháká, where he died shortly after, on the 2nd Ramazán, 1073. The second part is divided into 17 chapters, of which the sixth is particularly interesting as containing a description of Āsām and the Asamese in 1662 and occasional notices of the Aboriginal tribes in Eastern and Southern Āsām.

Koch Biha'r and Koch Ha'jo (Lower A'sa'm).

The following extracts are taken from the *Akbar-námah* (Lucknow Edition, III, p. 207). "To the events of this time [beginning of the 23rd years, of Akbar's reign, A. H. 986, or A. D., 1578] belongs the arrival of the *peshkash* from Bengal and Koch Bihār. Rājah Balgosāin, who is the Zamindār of Koch, submitted again, and sent valuable presents from Bengal with fifty-four elephants."

This was after the total defeat of Dáúd, king of Bengal, by Khán Jahán. *Áin* translation, p. 330.

The following passage from the same work (III, 762) refers to the end of the 41st year of Akbar's reign, or the middle of 1005 A. H. [A. D. 1596, end].

"About this time Lachmí Naráin submitted. He is the ruler of Koch, and has 1000 horse, and 200,000 foot, 700 elephants, and 1000 ships. His country is 200 *kos* long, and from 100 to 40 *kos* broad, extending in the east to the Brahmáputra, in the north to Tibbat, in the south to G'horá-g'hát, and in the west to Tirhut.

"About five hundred† years ago, a woman prayed in a Mahádeo temple for a son. Her prayer was granted, and she called the son Bisá. He became the ruler of Koch Bihār. One of his descendants, or grandsons

* The Asiatic Society of Bengal has a MS. of the work, No. 425 of the Persian Catalogue. It was also printed at Calcutta, in the old Madrasah, Baithak-khámah, 1st Rajab, 1265, by Masfúduddín Khán, a Munshí of the Foreign Department. The book is out of print.

† The Lucknow Edition has *fifteen*. Although I quote the Lucknow Edition of the *Akbar-námah*, I translate from MSS., for the text of the Lucknow Edition is worse than the worst possible MS. For *Bisá* the MSS. have *Bibá*, *Biya*, or *Bisbá*.

(*nabírah*), was Bál Gosáin, a wise ruler. He wrote a letter in praise of the Emperor and sent it with presents to Court. As he lived the life of an ascetic, he did not marry, and when he was fifty years old, he appointed Pát Kunwar, his brother's son, successor. But the Rájah's eldest brother, Shukl Gosáin desired a marriage, and in order not to offend him, Bál Gosáin assented, and had a son Lachmi Naráin. When he died and Lachmi Naráin became Rájah, Pat Kunwar rebelled. Being hard pressed by the opponent, Lachmi made his submission to the Emperor, and requested Mán Singh, the Governor of Bengal, to introduce him at Court. A meeting was arranged; Mán Singh set out from Salimnagar* and the Rájah travelled forty *kos* to meet him at Anandapúr. The meeting took place on 13th Dai. After many festivities, the Rájah wished to take Man Singh to his capital; but Man Singh was for some reason unwilling and politely took leave of the Rájah. The latter soon after gave him his daughter in marriage.

"As the Koch Bihár Rájahs had not personally paid their respects at the Court of the kings of Bengal, Sulaiman i Kararani had invaded Koch Bihár, but without result."

From the *Tuzuk i Jahángírí* (p. 147) we see that, in the end of 1024, ninety elephants were paraded before Jahangír, which Qasim Khan, the Governor of Bengal, had taken from Orísa, the Mugs, and Koch Bihar.

"In the beginning of 1027, or A. D. 1618, Lachmi Naráin paid his respects personally at Court in Gujrát, and presented a nazar of 500 muhurs" (*loc. cit.*, p. 220).

The following more detailed account is taken from the *Pádisháhnámah* (II, pp. 64 ff.).

Bengal in the north is bounded by two kingdoms, one of which is called Koch Hajo and the other Koch Bihár. Koch Bihár lies far away from the Brahmaputra; Koch Hajo lies on the banks of that river.

In the beginning of Jahangír's reign, Koch Hajo was ruled over by Parichhat, and Koch Bihár by Lachmi Naráin, who was the brother of Parichhat's grandfather. Now in the 8th year of the reign of that Emperor, when Shaikh 'Alauddín Fathpúri Íslám Khan had been made governor of Bengal, Parichhat was complained against by Rag'húnáth, zamindár of the Pargamah Sosang,† whose family Parichhat had imprisoned. Rag'húnáth's complaints were found to be correct; and as Parichhat had not behaved so submissively as Lachmi Naráin of Koch Bihar, Shaikh 'Alauddín determined to annex Koch Hajo, and ordered Mukarram Khan‡ quickly to invade Hajo with 6000 horse, 10,000 to 12,000 foot, and 500 ships\$. The

* Salimnagar is the name of the fort of Sherpúr Murchah (Mymensingh).

† Sosang lies east of the Brahmaputra, between the Karibári and the Gáro Hills.

‡ Áín translation, p. 493.

§ سمارى پيكارى.

vanguard was commanded by Kamál Khán who quickly yet cautiously marched to Hátáláh, which belongs to the Parganah Karibúri and is the beginning of Koch Hájo, fortifying at every stage his encampment with bamboo palisades according to the system of warfare followed in these parts of the country. He then advanced on Fort Dhubri, which lies on the [right] bank of the Brahmaputra and was garrisoned with 500 horse and 10000 foot of Parichhat's troops, and besieged it. After a bombardment of one month, he took the fort, killing a large number of the enemies. Parichhat now sent a valal from Khelah, where his residence was, to the commander, sued for peace, and offered 100 elephants, 100 Tinghans (ponies), and 20 *mans* of lignum aloes. He also promised to release Rag'húnát's family. Mukarram Khán and Kamal informed the Governor of Bengal of the proposals, and before the answer came back, Parichhat had carried out the terms and sent the animals, &c. But the governor demanded the surrender both of the country and of Parichhat's person. Hostilities were therefore resumed; but the army stayed in Fort Dhubri till the end of the rains. A sudden attack which Parichhat made on Dhubri with 20 elephants, 400 horse, and 10000 foot, was with some difficulty repulsed, and the enemy withdrew in disorder towards Khelah. The imperialists now left Dhubri and encountered Parichhat's fleet in the Gujardhar river. In the engagement which ensued, the hostile ships were driven back, and Parichhat was forced to retreat to Khelah. But even there he did not stay long, as he had heard that Lachmi Narain had joined the imperialists and was about to attack him from the flank. He therefore left for Budlnagar, which lies on the Banás river,* followed by the imperialists who had passed over Khelah and reached the Banás. Unable to hold himself any longer, he now surrendered himself to the mercy of the Mughuls, and was taken, together with his elephants and riches, to Mukarram Khán. Baldeo, however, Parichhat's brother, fled to the Sargdeo of Ásám, whose friend he was.

In this way Koch Hájo was annexed to the empire. Mukarram Khán, with the sanction of 'Alauddin Íslám Khán, appointed his brother 'Abdus-salam Fathpári to command the garrison which was to be left at Khelah, and returned with Parichhat as prisoner towards Dhaka. Immediately before his arrival, 'Alauddin had died, and as no successor had yet been appointed, Hoshang, 'Alauddin's son, and Mukarram sent a report to court. Jahangir ordered Parichhat to be sent to him. Soon after, Shaikh Qásim, 'Alauddin's brother, who had been in charge of district Munger, was appointed governor of Bengal with the title of Muhtashim Khán. Upon entering on his office, he appointed Mukarram Khán governor of Hájo. Mukarram obeyed and remained in Hájo for a year, when, vexed at the

* The Banás flows into the Brahmáputra, right bank, opposite to Gwálpará. The Pálíshálmánah spells wrongly دهوپوری and پناس.

annoyances he had to suffer at the hands of Qāsim, who certainly possessed little tact, if any, he left his post and proceeded over Ghorig'hāt to Court. Qāsim therefore sent Sayyid Hukim, an imperial officer, and Sayyid Abū Bakr with 10 to 12000 horse and foot and 100 large ships to Hājo, and ordered them to invade Āsām. They waited in Hājo for the end of the rains, marched three or four stages into Āsām, when they were totally destroyed by the Āsamese in a night attack. As this disaster was caused by the shortsightedness of Qāsim Khan, he was deposed from his office as governor of Bengal.

(Page 68.) Āsām borders on Hājo. As the Āsamese exclude foreigners, the only information regarding the country that we possess, is derived from prisoners or some of those doggish Āsamese who come to Hājo as traders. It is a large country, producing elephants and lignum aloes, which is called *agar* in Hindūstan, and also gold of inferior purity, which sells at half price. It borders on Khatā (Chinese Tartary). The present king [A. H. 1047, or 1637, A. D.] is called Sarg Deo, and is an infidel who keeps one thousand elephants and one hundred thousand foot. The inhabitants shave the head, and clip off beard and whiskers. They eat every land and water animal. In looks they resemble the Qarāqylpāq (?) tribe. They are very black and loathsome to far and near. The chiefs travel on elephants or country ponies; but the army consists only of foot soldiers. The fleet is large and well fitted out. The soldiers use bows and arrows and matchlocks, but do not come up in courage to our soldiers, though they are very brave in naval engagements. On the march they quickly and dexterously fortify their encampments with mud walls and bamboo palisades, and surround the whole with a ditch.

It was mentioned above that Baldeo had fled to the king of Āsām, whom he now persuaded to invade Hājo, offering his assistance under the condition that he was to be appointed governor of the province. The Āsām Rājā agreed and sent Baldeo with an army towards Hājo. Profiting by the unsettledness arising from the removal of one governor and the arrival of another, Baldeo took Durang, which was owned by several zamindars of that district and lies about 10 *kos* from Hājo, on the south of the Brahmaputra, and continued his aggressions by force and persuasion, so that he soon saw himself at the head of 10 to 12000 men, both Āsamese and Bangalis. The frontier thīnah of the Āsamese, therefore, which under the rule of Parichhat had been far off, was now much pushed forward.

At the time of Khan Zamān, who acted as Governor of Bengal for his father Mahābat Khan, Baldeo continued his raids unopposed, and took away Parganahs Lūki* and Bhāomantī, causing not only much distress in those districts themselves, but inflicting also severe losses on the empire,

* Duār Lūki is separated from Gwālpārā by Parganah Habrāg'hāt, and lies E. E.S. of Gwālpārā.

because he afforded protection to the people when the tax-gatherers came amongst them, and indirectly influenced the zamíndárs of other imperial districts to delay the customary payments.

During the governorship of Qásim Khán several chiefs had been sent to these districts with 10 to 12000 soldiers armed with shields and swords. Such soldiers are called *páiks*, and had before been in Hajo, and lived on the lands which the Bengal governors had given them as *jágírs*, being engaged either in cultivation or keeping up *k'hedahs* (enclosures for catching wild elephants). But as these men had been remiss in forwarding elephants, Qásim Khán called the chiefs to Dháká and imprisoned them for some time, after which he let them off on payment of a fine of 30,000 Rupees. The result was that Santosh Lashkar and Jairám Lashkár, who were the chiefs of the Paiks, fled to the Sargdeo Rájah of Asam, who provided for them, and thus attached them to his party. Again, when Islam Khán was appointed to Bengal, Satrjit, the wicked Thánahdár of Pándú, made common cause with Baldeo, and instigated him to profit by the change of governors and push forward. Baldeo thereupon collected an army of Asamese and Kochis, left Durang, and attacked 'Abdussalam, who was in charge of Koch Hajo and had been ordered to look after the k'hedahs. 'Abdussalam reported matters to Islam Khán and asked for reinforcements.

Islam Khán, therefore, in the 9th year of Shahjahan's reign (1st Jumáda II., 1045 to 1st Jumáda II., 1046, or A. D. 1636), sent 'Abdussalam's brother, Shaikh Muhiuddin, together with Muhammad Çálih Kambú, Mirzá Muhammad Bukhari and other imperial Mañabúders, as also Sayyid Zainul'abidin, one of his own soldiers of merit, with 1000 horse, 1000 matchlockmen, partly imperial and partly belonging to his own contingent, and 10 *ghrábs* and nearly 200 *kosahs* and *jálbahs*,* all well provided and fitted out, to 'Abdussalam's assistance. An officer was at the same time ordered to hasten to G'hórág'hát, and there collect boats, to convey the army and the baggage. The rainy season delayed matters, and when the forces reached G'hórág'hát, the horses and the heavy baggage were left behind till the end of the rains, whilst the men proceeded in small boats upwards. Muhammad Çálih, whose *kosahs* were swift going, had a start of two days and arrived first in Hajo. At this time Satrjit, the traitor, sent a message to 'Abdussalam, stating that he had heard from spies that the Asamese intended to make a night attack on his thánah. 'Abdussalam, therefore, ordered Muhammad Çálih to accompany Satrjit and protect his thánah. After a short march, night overtook them, and Satrjit asked Muhammad Çálih to remain where they were, whilst he would go and get information about the thánah. But as next morning Satrjit had not returned, Çálih broke up, and met Satrjit half-way with his ships, who gave out that the Asamese had attacked and taken his thánah with superior forces, and he had fled to save at least the ships.

* Kinds of ships; *vide* below.

They remained for one day and one night at the place of meeting, and hearing of Zainul'abidin's arrival, returned to Hājo. It was now resolved that 'Abdussalam should not leave Hājo; his brother Muhiuddin and Fazl Beg, an officer of Islām Khān, who commanded 300 horse and the same number of matchlockmen of the Khān's contingent, were to garrison the thanahs in the neighbourhood of Hājo, whilst Zain ul'abidin should push the ships as far as Srig'hāt, where Āsām begins, and try to keep the enemy at bay. Zain ul'abidin, therefore, and Muhammad Çalih, with imperial troops and soldiers belonging to Islām Khān's contingent, and many Zamindars and ships, marched forward, and met the enemy, who had advanced two *kos* beyond Pāndū. The Asamese at once left the two fortified camps which they had erected, and attacked the Imperialists. After a severe fight, they were dislodged and lost five guns. Zain ul'abidin destroyed their camps, and then marched quickly on to Srig'hāt, where the Asamese had assembled in force. Fighting was at once renewed, and in one of the engagements a *Phūkan*, *i. e.*, an Asamese chief and commander of ten or twelve thousand men, was killed. Five large ships, which they call *bachhārīs*, and several *kosahs*, *i. e.*, ships that have one mast,* were taken. On the following day also, the Asamese lost in an engagement 300 men, 12 *bachhārīs*, and 40 *kosahs*.

Islām Khān had in the meantime collected further reinforcements, and intended to take personally the command of the expedition. But on account of the great distance of Hājo from Jahāngirnagar, where his presence was required, he had to give up his plan, and therefore sent his own brother Mir Zain uddin, Allah Yār Khān, Muhammad Beg Abakash, 'Abdul Wahhāb, Mir Qāsim Sammānī, Amīrah Sāsīn, Sayyid Muhammad Bukhārī and others, with 1500 horse, 4000 matchlockmen and bowmen of his own contingent to Hājo. Muhammad Zamān of Tāhrān, who was Faujdār and Tuyūdār of Silhāt, was also ordered to join the detachment. As the Pāiks had, in the meantime, joined the Asamese, which deprived the Hājo and Srig'hāt corps of regular supplies, Islām Khān shipped large stores of grain and had them conveyed by twenty-five war-kosahs belonging to Ma'cūm Zamīndār,† who also took with him ammunition, weapons, and money. Khwājah Sher, Faujdār of G'horig'hāt and lately appointed to the Faujdārī of Khelah, was ordered to join with his detachment Mir Husaini, a servant of the governor, who with 200 horse and 300 foot had gone to Koch Bihār to collect the *peshkash*, and then to move to Dhubri. There they were to be joined by

* *Yakhobah*, *pr.* having one pole or beam, one-masted (?). On page 37, the term *kosah* was applied to such ships as are used to row war-ships.

The term *ghordāb* (غراب) is looked upon by the author of the *Pādishāhnāmāh* (I, p. 431) as a Bangālī term.

† Ma'cūm Zamīndār had also served in command of ships at the conquest of Hāgli, in the beginning of 1042, A. H.

Basbati (باسبتي), zamindār of Pātka and other districts (a relation of Parichhat, who exerted himself in behalf of the Imperialists), after which they should operate together with the Hājo army.

Before the provisions came up, 'Abdussalām had hastened to Srīg'hāt, in order to induce Sayyid Zain ul'ābidin who was stationed there, to come with him to Hājo; for the river had receded for two or three *kos* from Fort Hājo, and mutual succour was rendered impossible. The Sayyid at first refused to come; but at the urgent request of 'Abdussalām he at last agreed, put the ships in charge of Muhammad Çalīh Kambū, Satrjit, and Majlis Bāyazid, ruler of Sirkār Fathābad near Dhakā, and left several behind. No sooner had he left than the enemy with nearly 500 ships attacked at night the imperial fleet. The scoundrel Satrjit, who had been the cause of the attack, took the first opportunity to retire with his ships, and several others followed him from fear; nor would he return, when Çalīh sent his sons to him to induce him to do his duty. The imperialists were defeated: Çalīh was killed, Bāyazid was made prisoner, and the fleet fell into the hands of the enemies. Satrjit, moreover, on his flight, fell in with a number of ships which brought provisions to the army, and persuaded them to return.

Baldeo, thereupon, with his Asamese and Kochi troops, left Srīg'hāt and Pandū, and marched towards Hājo, which he besieged, successfully cutting off all supplies. 'Abdussalam, Shaikh Muhiuddin, and Sayyid Zain ul'ābidin were thus forced to have recourse to sallies, during which they destroyed some of his stockades. From want of provisions, the delay of reinforcements, and the superior number of the enemies, 'Abdussalām accepted an offer of peace, and went with his brother to the hostile camp. He was, however, immediately imprisoned and sent to Āsam. Sayyid Zain ul'ābidin with the rest of the men tried bravely to force his way through the enemies; but they were all cut up.

The corps commanded by Mir Zain uddin 'Alī, Allah Yār, and Muhammad Zamān Tahrani had, in the mean time, left the banks of the Brahmaputra, and attacked Chandr Narain, son of Parichhat. Chandr Narain had at first lived in Parganah Solmāri, which belongs to the Dak'hinkol, the district south of the Brahmaputra, on the right* banks of the river. But as most parts of the Dak'hinkol had been given to Satrjit as *tuyūl*, the latter had sent Gopināth, his brother's son, as thānahdār and collector to Parganah Karibāri. The inhabitants of the Parganah, in consequence of Gopināth's oppressions, had called Chandr Narain; and Gopināth, unable to resist him, had withdrawn. Chandr Narain had in a short time collected an army of 6 or 7000 Asamese

* We would say the *left* bank. The Persians do not look as we do to the mouth of a river in speaking of the right and left banks, but they look to the source, or *bālārāyah* (بالارياه), i. e., against the current.

and Kochis, and established himself at Mauza' Matlah,* which belongs to Karibāri, where he erected a fortified camp near the Brahmaputra, at a place full of jungle. The imperialists, on the 10th Sha'ban of the 10th year [1046, A. H.], came from the Uttarkol, the left [right] bank of the Brahmaputra, and arrived in rapid marches opposite to Karibāri. They crossed the river, and resolved next day to attack Chandr Narain. But the latter used the respite thus afforded him, fled from Karibāri, and retreated to Parganah Solmāri, where he had stayed before. The imperialists, next day, received the submission of the chiefs of Karibāri, both of paiks and ryots, levelled the fortifications erected by Chandr Narain, and cut down the jungle round about the stockades. Jalal, a relation of the zamindār Ma'gūm, was left here with 400 matchlockmen and paiks as garrison.

The imperialists now returned across the Brahmaputra, and entered Parganah Mardangī, which belongs to the Dak'hinkol. The chief of the district had also the name of Parichhat, and was father-in-law to Chandr Narain. By promises and threats they succeeded in getting him to come to the camp. About the same time the zamindār of Solmāri also, who from fear of Chandr Narain had fled to K'hont'ha'g'ha', joined the imperialists. They then marched to Dhobri, where they fell in with the traitor Satrijit and the convoy ships which he had managed to detain. As they had heard of Satrijit's treachery, and orders had in the meantime arrived from Islām Khān to seize him, they secured him and sent him on the Dhakā.

This Satrijit was the son of Mukindra, zamindār of Bosnah, which lies three stages from Dhakā 'on this side.' Shaikh 'Alauddin, when Governor [under Jahangir] of Bengal, had sent him along with the army which then invaded Hajo; and as he distinguished himself in the war, he had, after the conquest of the country and the return of the army, been appointed Thanahdār of Pāndū and Gaubattī, where, chiefly through his numerous dependants, he had obtained the friendship of the Asamese, and had also, by his influence as zamindār of Bosnah, become quite intimate with the chiefs of Koch. The governors of Bengal who succeeded Shaikh 'Alauddin, had often called him; but he made for ever excuses and neither paid his respects, nor did he send the customary *peshkush*. When, however, Islām Khān was made governor, he found that subtleties availed nothing, and calling his son, who was in Jahāngirnagar, to take his place, he paid his respects to the governor, and was ordered to join the corps under Shaikh Muhiuddin. But he was a traitor, and kept on friendly terms with the Āśam Rajah and Baldeo, Parichhat's brother, and not only furnished them with information, but induced many zamindārs to rebel. He now met with his deserts, and was imprisoned in Jahāngirnagar and executed.

* *متله*, if this be no mistake for *هتسله*, Hutsilah. The initial *h* in MSS. is written like a *m*, and the *ś* is a mere horizontal stroke.

The unhappy fate of 'Abdussalām emboldened the Asamese and Kochs to advance with 12000 foot, 50 war-sloops, and many *kosaks* to Jogig'hopah, which is a long hill situated opposite to the confluence of the Banās and Brahmāputra [near Gwālpārā], where, protected by dense jungle, they hoped to check the imperialists. They had erected a strong fort, and had made another opposite to it at a place called Hīrahpur, on the other side of the Brahmāputra. Jogig'hopah was garrisoned with 3000 foot; the other portion of the army was located at Hīrahpur, whilst the fleet anchored between the two forts. The imperialists now left Dhubri, and came to the Klānpur River, which flows from K'hont'hag'hāt into the Brahmāputra, and crossed it. Basbatī, who with the zamīndārs and the footmen was employed to cut down the jungle and prepare a road for the army, here reported that the enemies were in sight, and Zain uddin 'Alī and Allāh Yār gave him 3000 matchlockmen, and told him to drive away the enemy. At the first attack, the Asamese ran away and were pursued for six *kos*. Next day, the imperialists came to Jogig'hopah. After several fights, the enemies again withdrew, and the imperialists crossed the Banās. It was at this time that Chandr Narāin perished, and received the reward for his disloyalty. As he had been the cause of the defection of the Dak'hinkol, Muhammad Zamān was immediately sent there with 1000 horse and 4000 foot, to clear the country: if the zamīndārs submitted, they were to be sent to the army to serve; if not, they were to be killed. This Muhammad Zamān did in a short time, and the Dak'hinkol being clear of the enemy, he returned with his corps to head quarters. The whole army then marched to Chandankot. On their way, they received a letter from U'tam Narāin, son of Sardābar, zamīndār of Budhnagar, in which it was said that Baldeo had arrived with 3000 Kochs and Asamese in Budhnagar, and that the zamīndār, unable to oppose him, had crossed the Banas and gone to K'hont'hag'hāt, from where he wished to join the imperial camp. Muhammad Zamān with a strong detachment was ordered to march against Baldeo, accompanied by U'tam Narāin, who had just come and was thoroughly acquainted with the country. The principal part of the army remained at Chandankot. Muhammad Zamān now crossed the Pomārī River, took a stockade which the enemy had erected on its banks, and marched upon Budhnagar. Baldeo, in the meantime, had deserted the strong encampment he had thrown up at Budhnagar, and had withdrawn to Chot'hri, a zamīndāri which also belongs to Sardābar, where he erected several forts in the jungle at the foot of the hills. The imperialists, therefore, turned towards the jungles, and halted at Bishnpur, an elevated spot near to Baldeo's encampment, in order to wait for the end of the rains and to get their war-material into order. Baldeo boldly advanced from Chot'hri, having received from Srig'hrit and Pāndū reinforcements which increased his army to 40,000 men, and threw up fortifications at the Kalāpāni River, which is $1\frac{1}{2}$ *kos* dis-

tant from Bishnpūr, whilst he himself with the greater part of his army remained encamped at the distance of about a *kos*, protected by rising ground, a river difficult to cross, and dense jungle. He made several night attacks, and by throwing up palisades in front of the imperialists succeeded in reducing them to great straits. After some time, the Sarg Deo, who was at Pándú, in consequence of a letter received from Baldeo, sent his son-in-law to him with nearly 20,000 Asamese, who were ordered to march on Chandankot.

As the rains had in the meantime decreased, the army of Islām left its encampment at Chandankot, and marched on to Bishnpūr. Baldeo determined to do something before both hostile corps should effect a junction; and on the night between Friday and Saturday, 20th Jumada II., of the 11th year of the present reign [*i. e.* 20th Jumada II., 1047, or 31st October, 1637], he ordered some of his men on this side of the Kalipāni to attack the imperialists at night. The result was that they carried two stockades which had not been quite finished. Next morning, Muhammad Zamān took at once the offensive, and leaving a party behind to protect his stockades, he attacked the works of the enemies. The first were immediately taken by storm, and the imperialists in pursuing the Asamese entered with them into the second line of their defences, and killed a good number. Even here the enemies gave way, and the victors had arrived at their third line of fortifications. Before noon, 15 stockades were taken, and more than 4000 Asamese killed. Several chiefs also, who held commands of about 5 to 6000 were killed, and three of them were brought in prisoners. Many guns, matchlocks, and other weapons fell into the hands of the victors. All stockades on this side of the river were burnt down. The defeated enemies fell back on Baldeo, and the imperialists thought it best to march as soon as possible on Bishnpūr.

On the 12th Rajab [21st November, 1637], the whole army was divided into three corps, and marched against Baldeo, whose position they attacked from three points. The enemies soon fled on all sides. A very large number was killed. The son-in-law of the Asām Rajah was taken captive, and was afterwards, together with all other captives, executed. Up to the end of the day, every Asamese found in the jungles was killed. The shattered remnants of the enemies withdrew to Srīg'hāt and Pándú, where the Rajah was with the heavy baggage and the fleet. Baldeo escaped to Durang.

After this victory, the imperial forces marched against Pándú and Srīg'hāt, and arrived on the 24th Rajab [3rd December, 1637] near Akyah Pahāri (آکھ پھاری, ?). The commander next morning sent three detachments up the hill to take the outworks (*sarkob*); Muhammad Beg Abakash, Mir Muhammad Qasim Sammāni, Sayyid Muhammad Bukhārī, and other imperial commanders, attacked the works at the foot of the hill, whilst the commander himself with Allah Yar and Muhammad Zamān followed in the rear.

The enemies commenced immediately a cannonade, which did, however, no damage whatever. The outworks on the top of the hill were taken. The imperial fleet at the same time engaged the hostile ships, and scattered them. Many Asamese were killed. Srighat was now attacked. Allah Yár and Muhammad Zamán came up, surrounded the forts, and drove away the enemies. The sailors, in the meantime, directed all *ghrábs* and *kosáhs* towards Pándú, and engaged the enemies who guarded Pándú on the other side of the river. Here also the flight soon became general, and Ma'çúin zamíndár did much damage with his ships among the enemies, many of whom threw themselves from their ships and met with their death in the waves. Nearly 500 war-sloops and 300 guns fell into the hands of the victors, and in a short time no enemy was to be seen.

The whole of Koch Hájó was thus cleared of the Asamese, and was again, as before, annexed to the empire.

The conquest was completed by the taking of Fort Kajlí, which lies on the Brahmaputra. The fort is surrounded on three sides by hills, through which a large river [the Kulang River] breaks that flows into the Brahmaputra. As it is the place where Ásam proper commences, it was held by several Asamese chiefs. A detachment was sent to Durang to hunt down Baldeo, and the fleet was ordered to sail to Kajlí. The hostile garrison fled also here; the imperialists crossed the river, and took possession of the fort. A garrison of 1000 horse, 3000 matchlockmen, 2000 páiks, and several zamíndárs, were ordered to guard the place.

Baldeo, in course of time, was reduced to great straits. He fled to Singrí, an Asamese town between the hills and the Brahmaputra, and soon after perished miserably with his two sons.

During the next three months the whole district was pacified; the zamíndárs made their submission, and the country received a financial settlement. Gawáhatti, which had formerly been an important town, became head quarters, and the commanders remained here during the rainy season.

His Majesty [Shahjahan], in recognition of the services of the army promoted Iskan Khán, who had been a commander of 5000, 5000 horse, 3000 *duaspah sihaspah* troopers, to a command of 5000, 5000 horse, 4000 *duaspah sihaspahs*; Allah Yár Khan received an increase of 500, 200 horse, and was now a commander of 3000, 2000 horse; Muhammad Zaman was made a commander of 2000, 1800 horse; and Mír Zainuddin 'Alí, a commander of 1000, 200 horse, with the title of *Sayádat Khán*. Rahmán Yar and 'Abdul Wahháb also were promoted.

Mír Núrullah of Harát was appointed Thanahdár of Koch Hájó, with a command of 3000, 2500 horse. (*Padisháhnámah*, II., 94).

Having completed the extracts from the *Pādishāhnāmah*, I now proceed to the *Fathiyah i 'Ibrīyah*. I do not intend to give a translation of the whole book, but shall in general content myself with a detailed analysis, and a comparison with the *'Ālamgīrnāmah*. Of the more interesting chapters and passages, however, the analysis will be found to approach a translation.

The subjugation of Koch Hājo and Kāmṛp by the imperialists in 1637 appears to have been thorough. At least we have no information of new troubles having broken out till A. H. 1068, or A. D. 1658, when Shahjahan fell sick, and the wars of succession followed. In that year, the Faujdar of Kāmṛp and Hājo was Mir Luṭfullah of Shirāz. The government of Bengal had for several years been in the hands of Prince Shujā', who had now collected the whole Bengal corps to oppose his brothers. From the frontier-districts, especially, the imperial detachments appear to have been entirely withdrawn: for no sooner had the emperor's sickness become known than Bhīm Narāin, Rājah of Koch Bihar, made raids into G'horiāghāt, carrying off a great number of imperial subjects, men and women. He also sent his vazir Bhawānāt'h* with an army into Kāmṛp. Jaidhaj Singh also, Rājah of Āsām, thought circumstances favorable, and unwilling to allow the Kochis to recover territories which they formerly had held, he marched with a large army, accompanied by a numerous fleet, into Kāmṛp. Mir Luṭfullah, seeing himself thus attacked from two sides, and having no troops to check the invaders, took his ships, and withdrew to Dhakā. The Kochis again, unable to oppose the Asamese, retreated, and the whole province was at the mercy of the Āsām Rājah, who even annexed part of the Parganah Karibāri, Hatsilah being as formerly their most advanced thānah.

For three years nearly did the Asamese remain in undisturbed possession of the newly annexed territory, when after the flight of Prince Shujā' to Arakan, in Ramazān of Aurangzib's third year, [*i. e.* Ramazān, 1070, or June, 1659], KhānKhānān Mir Jumlah, governor of Bengal, occupied Jahāngirnagar. It was immediately after this event, says the author of the *'Ālamgīrnāmah*, (p. 680) that Jaidhaj Singh sent a vakīl to Mir Jumlah, stating that he had taken possession of the imperial lands for no other reasons but to keep out the Kochis; he was now prepared to hand them again over to any officer whom the governor might send to him. The statement found favor; Mir Jumlah rewarded the vakīl with a *khaṭ'at*, and Rashid Khān, Sayyid Naṣiruddin Khān, Sayyid Sālar Khān, Aghar Khān, and others, were ordered to receive back the imperial lands. Bhīm Narāin also sent at this time a vakīl, in order to ask the governor's pardon for his want of loyalty and open rebellion; but Mir Jumlah would listen to no excuse, imprisoned

* So the *Fathiyah i 'Ibrīyah*. The *'Ālamgīrnāmah* has, perhaps correctly, Bho-lānāt'h. For Bhīm Narāin, MSS. have also Pem Narāin.

the vakil, and ordered Rájah Subhán Singh Bundelah* with an imperial corps and Mirzá Beg, one of his own officers, with 1000 horse, to occupy Koch Bihár.

As soon as the Asamese heard of the approach of Rashid Khán, they withdrew from Karibári and the neighbouring places, and returned at last beyond the Banás river [opposite Gwálpára]. Rashid Khán thought their sudden retreat to be a snare, and refused to advance beyond four stages from Jahángirnagar; but on receiving further supplies under Sayyid Yúsuf, who during Shuja's government had been Faujdar of Karibári, he occupied that Parganah, and soon after took possession of Rangámáfi. Here he remained, and reported to the governor that the Asamese were making extensive preparations to recover the lost territory.

Subhán Singh in the meantime advanced to Yak Duár; but seeing that Rashid Khán did not press forward, he, too, remained where he was, especially as the rains had set in, and sent discouraging reports to the governor. By 'Duár' a fortified gateway is meant, built of mortar and bricks, which stands upon a broad *ál*, or raised road,† mostly overgrown with trees, and surrounded by deep and broad ditches and jungle, where the treacherous inhabitants of these districts use to hide.

The governor saw that matters could no longer be left in the hands of his officers, and on obtaining the necessary orders from court, he prepared himself to invade Koch Bihár and Asám.

The Conquest of Koch Bihár in 1661.

On the 18th Rabi' I., 1072 [1st November, 1661, A. D.], the fourth year of Aurangzib's reign, the Nawáb [Mir Jumla] started from Jahángirnagar, leaving Ihtishám Khán in Khizrpúr to protect the capital. Mukhlis Khán garrisoned Akbarnagar (Rajmahall), and all financial matters were left to Bha-

* The Bibl. India Edition of the 'Alamgír-námah must be used with care, as the proper names are mostly all wrong. Thus on p. 679, مست سله should be هتسله; p. 680, كجل should be كچلي; p. 681 and in the whole narrative, سچانسنگ should be سبچان سنگ; آغرحان Aghar Khán is also doubtful, the correct spelling being perhaps إغور (ایغور), Ighyr Khán. On p. 690, for پھوتنت and پھوت read the same forms with b; p. 692, read میچ for مسیح; p. 693, کوچ بہادر for کوچ بہار; p. 694, کھونٹہگھاٹ for کھونٹہگھاٹ; p. 696, ناگرگانو for ناگرگانو; Do., پھانچہ for پھانچہ; p. 700, پاندو for پاندو; p. 703, مکروینچ for مکروہچ; Do., چمدھر for چمدھرہ; p. 713, سید نثار for سید نثار; pp. 720, 721, منورخان for منورخان; سید تاتار for سید تاتار; p. 722, دولہ for دولہ; p. 727, کلٹانی for کلٹانی. These are only mistakes in proper nouns.

† Abulfazl thinks that the raised roads, or *áls*, in Bengal, have given rise to the name of the country, *Banga-ál*.

goti Dās, the Diwān, and to Khwājah Bhagwant Dās; Mir Ghāzī was appointed Bakhshī and Wāqī'ahawīs, and Muhammad Muqīm commanded the fleet. The Nawab first marched to Baritalah (بريتالہ),* the harem and the heavy baggage having been sent *viā* G'horāg'hāt. Now three roads lead to Koch Bihār, two from his Majesty's empire, and a third *viā* Morang (مورنگ). Of the former two, the first is known as the Yak Duār; and if the Duār be forced, there would be no further obstacles, and the army might proceed to the town of Koch Bihār. The second is known as the K'hont'ha-g'hāt road†. It passes near Rangāmāti, and is a narrow road intersected by many nalāhs. To both sides of the *āl*, or embankment, there is dense jungle up to the town of Koch Bihār. But there was still another road, along an *āl* much lower than the others, and surrounded by dense bamboo shrubs; and as the Rajah thought the road impracticable for an army, he had not guarded it. For this reason the Nawab determined to go by this road, and ordered the fleet to anchor in the nalāh which flows from Sirkār G'horāg'hāt into the Brahmaputra.

On the last day of Rabi' II. [12th December, 1661], Rajah Subhān Singh joined the Nawab.

On the 1st Jumāda I. [13th December, 1661], the Nawab arrived at the foot of the *āl*. A few enemies were there, but they dispersed on his approach. On the next day, the army went along the *āl*, the Nawab himself being continually on horseback. The march was difficult, and the elephants and the footmen had continually to cut a road through the jungle. At a place three stages from Koch Bihār it was reported that the Rajah had fled to Bhūtānt (Bhootan). The army also crossed here a river, which was said to be bottomless.

On the 6th Jumāda I., the army stood before Koch Bihār, and on the next day [19th December, 1661], the Nawab entered the town. The *azān*, or call to prayer, was chanted by Qadr Mir Muhammad Qalib in the Rajah's palace.

The kingdom of Koch Bihār extends from Parganah Bhetarband, "which belongs to his Majesty's empire," to Pātgaŋw‡ near the frontier of

* "The frontier of the empire." 'Alamgīrnāmāh. Baritalah lies near Chilmāri, near the right bank of the Brahmaputra, opposite to Hatsilah in Parganah Karibari.

† The Bibl. Indica Edition of the 'Alamgīrnāmāh has G'horāg'hāt, but gives the correct reading in a footnote.

‡ The printed edition has Pāpgaŋ, the MS. Pātyaŋ. Pātgaŋ in the north of the Rangpūr District appears to be meant.

The 'Alamgīrnāmāh (p. 691) has the following—

"The length of Koch Bihār is 55 statute (*jarībī*) *kos*, and the breadth 50. * * * Whatever of the country lies within the *band*, is called 'Bhetarband.' One large and two small rivers enter the 'band;' and these, together with such rivers as come from

the kingdom of Morang. It is 52 statute *kos* long. The breadth from the Pargnah of Tajhat, which belongs to the empire, to Pāsakarpūr (پوسکوپور), near Khont'ha'hat, is 50 *kos*. The mountains of Bhūtānt, which are inhabited by the Bhūtīahs, produce Tāngun horses, Bhūtīah cloth, *Parī*,* and musk. Koch Bihār is well-known for its excellent water, mildness of the climate, its fresh vegetation and flowers. Oranges are plentiful, as also other fruits and vegetables. If properly administered, the country might yield a revenue of 8 lacs of rupees. The inhabitants, since ancient times, are the Mech and Koch tribes. The Rājāh belongs to the Mech. He coins gold mohurs and Nandan rupees. The zamindars of India esteem the Koch Bihār Rājāhs, and believe that they trace their descent from Rājāhs who reigned there before the arrival of the Muhammadans in India.

Bhām Nar in was a noble, mighty king, powerful, and fond of company. He never took his lip from the edge of the bowl, nor his hand from the flagon; he was continually surrounded by singing women, and was so addicted to the pleasures of the harem, that he did not look after his kingdom. His palace is regal, has a *ghasulkhānah*,† a *darshan*, private rooms, accommoda-

other sides, flow into the Sankos. Outside the 'band' are 5 chaklahs, containing 75 parganahs; and within the 'band' there are 12 parganahs. The revenue of the kingdom is nearly 10 lacs of Rupees.

* The printed edition has *پاری* *parī*, the MS. *سری* *sarī*. The '*Alamgirnāmah*' says (p. 69v) that '*parī*' is a kind of thick cloth with long threads (*parā* in like coarse plush), woven on strings, and is used for carpets. "Another woolen stuff is called *پھوت*, *phūt*." The last is very likely a mistake for the *Bhūtīah* cloth mentioned in the text.

† The word *ghasulkhānah*, as is well known, means now-a-day a bath-room, or a closet, or bath. At the Dillī court it had a particular meaning, as will be seen from the following extracts. The *Bahar i 'Ajam* says—"It is said that Sher Shah, when emperor of Dillī, appointed a room in the Palace where he used to sit after his bath, in order to have his curls dried. (This, by the way, is the only historical statement which ascribes curls *gossā* to Sher Shah.) When Akbar came to the throne, he called that room *Dūrān i kōḥ*. Khirā Arzū says that he had heard that the grandees in old times used to sit on coming to pay their respects; but when Akbar came to the throne, he disapproved of it. He could not, however, do away with the custom, and built a house where he took his bath, but put on that account no carpets on the ground, so that when the Amirs came in, they had to stand. And from his time, the grandees in presenting reports, &c. have been accustomed to stand. Now the room was called *ghasulkhānah*, and though the bath was in course of time abolished, the name remained."

From the *Pālishāh-nāmah* (II, p. 22v) we see that Shāhjahān wished to change the name from *ghasulkhānah* to *dārshkhānah i khā*; but the old name remained. Bernier (Calcutta edition I, p. 30v) calls the '*goss-kanny*' an evening reception room.

Darshan, as the name implies, is the place where the king shews himself to the people, a general audience hall.

tions for the harem, for servants, baths and fountains, and a garden. In the town there are flowerbeds in the streets, and trees to both sides of them. The people use the sword, firelock, and arrows, as weapons. The arrows are generally poisoned; their mere touch is fatal. Some of the inhabitants are enchanters; they read formulas upon water, and give it the wounded to drink, who then recover. The men and the women are rarely good looking.

As the people, a day before the army arrived, had fled, the Nawab strictly forbade plundering; and a few soldiers, having gone marauding and brought home a cow, or a goat, or a few plantains, were marched through the camp and the town with an arrow stuck through their noses, and the stolen things suspended from their necks. This encouraged the inhabitants, and they returned to their homes.

The son of the Rajah* about this time fled from his father, and waited on the Nawab, and became a Muhammadan.

Isfandiār Beg, son of the late Ilāh Yar Khān, was ordered to M-rang to capture Bhawanāth, the Rājah's vazir. Farhad Khan also was sent there by another route. Riza Quī Beg Abikash, a companion of Isfandiār, captured the vazir and brought him in fettered, as also his wife and child. According to orders, the Yak Dwar was levelled with the ground, and by cutting down the trees for about a hundred yards, an open space was made. 106 guns, 145 zambiraks, 11 rancebangis, 123 matchlocks, and much material and baggage, were seized. The artillery stores were forwarded to Jahangirnagar. Of the other things Muhammad 'Abid, the Barrack Master, took charge. A party was then sent to Kānthālbarī at the foot of the Bhūtānt Hills, where the Rājah concealed himself; but the Rājah withdrew to the summit of the mountains. Only an elephant, several horses, and cow carriages, and a Bhūtiah, were brought back. The Bhūtiah begged hard for his life, and promised to take a letter to the Rājah of Bhūtānt, whose name is Dharmarajah, and who is over one hundred and twenty years old. He is an ascetic, eats only plantains, drinks only milk, and indulges in no pleasures whatever. He is famous for his justice, and rules over a large people. The prisoner also told us that a river runs through his kingdom, not very broad, but very

* The *Flamengénisch* calls him Bishu Narain, and says that Bhun Narain from distrust had always kept him under surveillance (p. 688).

For *Mech*, the Bibl. Indica edition of that work has Mash (मश). "The inhabitants of Koch Bihār belong to two tribes, the *Mech* and the *P'loer* tribes. The former live within the 'band,' the Bihars without it. In fact the name Koch Bihār has a reference to this tribe; even Āsīm is sometimes called 'Koch Āsīm.' The people are very ugly, both men and women; they look like Qalmāqs, and have a steel blue complexion. Some are fair. Among the *Meches* white people are found. This tribe furnishes agriculturists and soldiers" (pp. 692, 693).

The king in the *Flamengénisch* also is described as an effeminate voluptuary, who left every thing in the hands of his vazir 'Bholānath.'

rapid and deep; and a chain passes over the water, the ends of which are fastened to opposite rocks. Above this chain there is another, the distance between the two being the height of a man. People cross the river by walking along the lower chain and supporting themselves by seizing the upper one; even horses and burdens are made to cross the river on the chain. I cannot vouch for the truth of the Bhútiah's story. The man looked very fair, was strongly built, and had long, light brownish hair, hanging over the shoulders. His only dress was a white cloth which covered his private parts. Their language is related to that of the Kochís. The Nawáb now sent the man with a letter to the Dharmrájah, asking him to seize and send Bhím Naráin to him, or at least drive him from his hills. The man brought at last an answer, in which the Dharmrájah excused himself by saying that he had not called Bhím Naráin; but as he had come unasked, he could not well drive away a guest.

The Nawab had no time to lose, overlooked the impertinence, and prepared himself to invade Āsám.

Koch Kihār was thus annexed. The name of the town was changed to *Ālamgírnagar*. Isfandiar Beg received from his Majesty the title of Khán, and was to officiate as Faujdár of the country till the arrival of 'Askar Khán, who had been appointed to that office. Isfandiar remained in Koch Bihār with 400 horse of his own contingent, and 1000 Imperial matchlockmen; Qazí Samúí Shujá'í* was made Diwan; Mir 'Abdurrazzáq and Khwájah Kishwar Dás Maṇḡabdár were made Amins.

The Nawab after a stay of sixteen days started for Āsám.

The Conquest of A'sa'm.

The Nawáb left Koch Bihār on the 23d Jumáda I., [4th January, 1662],† and marched over K'hont'baghāt into Āsám. Everywhere there were dense jungles. When he arrived at Rangámáti, Rashíd Khán joined him. The zamíndárs of the district, who believed the conquest impossible, could not be trusted, and the Nawáb had for carriage and guides solely to depend on his own exertions. Dilir Khán was appointed *haráwal* (vanguard); and he and Mir Murtazá, the Daroghah of the Artillery park, had to look after the roads. In consequence of the jungles and the numerous nahas, which

* *I. e.* Qází Samú, who had been in the service of Prince Shujá'. The Bibl. Indica Edition of *Kháfí Khán* calls him Qází Timúr, evidently on the authority of bad MSS. Besides, Kháfí Khán is an untrustworthy historian.

The "rebellious" princes of the Dihlí house receive nick names at the hands of the historians. Dárá Shikoh, *i. e.* 'one who has the dignity of Darius,' is called *Dárá be Shikoh*, the undignified Dárá; Prince Shujá', *i. e.*, 'the brave,' is always called *Náshujá'*, 'the recreant.' Shahryár, Jahángir's son, who proclaimed himself at Láhor, was nicknamed *Náshudaní*, or 'good-for-nothing.'

† The *Ālamgírnamah* (p. 694) says that he reached the Brahmáputra on the 28th.

however were mostly shallow, the daily progress was not more than 2 or 2½ *kos*. The fatigues which the men had to undergo defy all description. The grass and the reeds especially were annoying to men and animals.

At last, on the 9th Jumáda II., [20th January, 1662], they reached and took possession of Fort Jogig'hopah* [opposite Gwálpárá], which belongs to Kámrúp. The enemies had fled without striking a blow. 'Atáullah, a servant of the Nawáb, was left here as Thánahtár. It is a high and large fort on the Brahmáputra. Near it the enemies had for a short distance dug many holes in the ground for the horses to fall into, and pointed pieces of bamboo (called in their language *phánjís*) had been stuck in the holes. Behind the holes, for about half a shot's distance, on even ground, they had made a ditch, and behind this ditch another one three yards deep near the fort. The latter ditch was also full of pointed bamboos. This is the way how the Asamese fortify all their positions. They make their forts, like the Indian peasants, of mud. The Brahmáputra is south of the fort; and on the east a large river, called the Banás, flows past the mountain and joins the Brahmáputra. To the north, the fort is guarded by a ditch, several mountains, and dense jungle. The writer nearly lost one his horses that had put its foot into one of the holes.

A bridge of boats was made over the Banás. At the time of crossing, the guns of a boat fell into the river; so also a gun belonging to the Nawáb, which shot *ser* balls (سیرگوله). The latter was after several days' labour recovered.

Naqiruddin Khán, Yádgár Khán, and other Amírs crossed the Brahmáputra, and marched along the other bank opposite to the army, whilst 'Atáullah, one of the Nawab's men, was left behind as commander of Jogig'hopah.

On the 24th Jumáda II. [4th February, 1662], the neighbourhood of Gawáhatti was reached. Rashíd Khán was sent off, to prevent the enemies from escaping to the north. But before he could reach, they had fled, and left the fort empty.

On the 25th Jumáda II., the army reached Fort Sríg'hať. The exits and entrances had all been closed with large logs of wood driven into the ground. Some the elephants pulled out, some Hájí Muhammad Baqir of Isfáhán, a servant of the Nawáb, renowned for his strength. The Nawáb entered and inspected the place, and then moved to Gawáhatti, which lies a *kos* further on. Fort Pándú also, which lies on the other side of the river opposite to Sríg'hať, was taken without fight. Yádgár Khán Uzbek killed, however, a

* The '*Ālamgír-námah*' (p. 696) says that Jogig'hopah means 'Hermit's Cave,' and was so called from a Hindú Ascetic who had lived there. On the other side of the river was a mountain called Panch Ratan, also fortified. An island on the river had also been fortified with palisades.

large number of the retreating enemies. The garrison also of Fort Kajli, which lies 7 *kos* farther from Fort Pandú, had deserted the stronghold. Some zamúráks, matchlocks, and a quantity of gunpowder, were captured. Fort Sríghat is bigger and higher than Fort Jogíghopah. Fort Pandú is about equal to Fort Sríghat; Fort Kajli is not less important. Idol-temples devoted to Gaumukhiadebi and Lunachamari and Ismaíl Jogí, are upon the mountain near Fort Pandú. From the foot of the mountain to the top there is a stone staircase of more than 950 and less than 1000 steps. Fort Kajli lies near the very same 'Kajliban,' which is mentioned in Hindú books. It is a place full of elephants.

At this time Makardhaj,* Rájah of Durang, who is subject to the Rájah of Āsám, came and paid his respects to the Nawab, presented an elephant, received a *kha'at*, was promised protection, and was ordered to travel with the army.

Muhammad Beg, a dependent of the Nawab, was made Faujdár of Gawáhatí, and Hasan Beg Zangamah, also a servant of the Nawab, was made Thánahdár of Kajli.

II.

After Rashid Khán had occupied Rangúnáti, before the Nawab had left Khizrpur, the zamúndars of Āsám had sent an ambassador to Rashid Khán with insolent letters. Rashid sent the man to the Nawab, who told him in plain terms that if the Rájah of Āsám would restore those lands which he had occupied and would send his daughter with a decent *peshkash* and also the guns and other things which he had carried off from Kámrúp, and make a treaty and give his oath that he would in future desist from annoying the imperialists, the Nawab would give up the expedition. Indeed the Nawab would have liked such an arrangement, and would have contented himself with the cession of Kámrúp and a moderate *peshkash*, as he wished, after the rains were over, to invade Arakan; for his Majesty had ordered him to send the children and the wives of Prince Shuja' to court. But the Nawab resolved to settle in this year the affairs of Koch Bihar and Āsám, and to go next year to Arakan. The ambassador to whom he had given the above answer, did not return; and after having waited some time at Gawáhatí, on the 27th Jumada II., the Nawab set out, and entered Āsám Proper. Asamese warfare depends upon tricks and night attacks; hence all guards were ordered to do *chauki* armed and with their horses saddled.

The march was directed to Ghargáon, the capital of the Rájah, which lies on the other side of the Brahmaputra. First it was necessary to take Fort

* The Bibl. Indica Edition of the *Manjiródmah* (p. 703) has *Makropotaj*.

Chamdthurah. At the place Bartinah* (برتينه), which lies halfway between Gawāhatī and Chamdthurah, the whole army crossed in two days the Brahmaputra on boats, on the 6th Rajah [15th February, 1662]. A messenger, who had accompanied the former Asamese ambassador, came here into camp with an evasive answer. The Rajah of Dīmuriāh (دیموریه), one of the subjects of the Rajah of Āsām, sent his brother's son with an elephant to attend on the Rajah, begging the Nawab to excuse his absence as he was sick. His relation went with the camp.

At this time Mīrzā Beg, the Bakhshī of the Nawāb, was killed. He was stabbed by one of his soldiers; but though mortally wounded, he inflicted two sword-cuts on the man. Mīrzā Beg died during the night, and the murderer was killed by Mīrzā Beg's relations.

At one of the stages, a tremendous storm took place, during which many ships were upset; large pieces of hail also fell, and many horses threw themselves into the river. The Asamese, thinking that Fort Chamdthurah would be, as it had been in former expeditions, the farthest point of the advance of the imperialists, had strengthened the fortifications of Simalahgar, which lies on the other side of the river, opposite to Chamdthurah. On the 11th Rajah [20th February, 1662], the army encamped at the foot of Simalahgar, so near the fort that a zamburak ball from the fort passed over the Nawab's tent. Some of the Nawab's men wished to take the fort by climbing up; but as this would have cost much human life, they were ordered not to do so, and a siege was commenced.

Simalahgar is very strong and high. The inhabitants are as numerous as ants and locusts. Two sides of the fort have walls with battlements, and guns are placed without break upon them. The guns are all manned. At the foot of the walls are a ditch and the customary holes with the *phānjīs*. On the south side, the fort ends in a hill extending for four *kos*. The

* برتينه, MS. برتبه. The 'Ālamgīrnāmah does not give the name.

The name 'Bartinah' is doubtful, and our modern maps do not help us to identify the place where Mīr Jumlah crossed for the left bank of the Brahmaputra. Chamdthurah lies opposite to Tezpur, the maps giving a Mahall Chamdhoree and a place of the same name. A Chamdhoreegau I find marked on an island of the Brahmaputra, east of Tezpur, half way between Tezpur and the Kamakhya Temple.

Simalahgar (for which the Bibl. Indica Edition of *Khūf Kūdā* gives *Bhīmgar*) is not on our maps; but it cannot lie far from Tezpur, as it is said to lie opposite to Chamdthurah. After the conquest of Simalahgar, the Nawāb inspected the fort and encamped on the same day at Kalyābar, which lies on the left bank of the Brahmaputra, S. E. of Tezpur.

The identification of these names is a difficult matter, as it would appear that the numerous branches of the Brahmaputra are often shifting. Mr. Foster (*vide* pp. 35, 39) identifies Bernier's Chandara with a place of the same name five miles from Ghargau. This may be correct; but if so, it is another Chandara, because the Chamdthurah opposite to Simalahgar lies, as will be seen below, seven days' marches west of Lak'hūgar, the western point of Majuli Island.

northern wall is near the Brahmáputra, about 3 *kos* distant from it. A nálah extends from the south of the fort, touching the southern bastion and from there flows westward. The army encamped on the banks of this nálah.

Mahnaúd Beg distinguished himself by his alertness. Dilír Khán and Mir Murtazá were in advance, and threw up trenches within gun-shot distance from the fort. The big guns were sent to them; but as the walls of the fort were too wide, the guns made little impression on them. The commanders, however, carried their covered ways (*sibah*) close up to the wall, continually exposed to the fire of the enemies. In one night, a sally on the covered trenches was with difficulty repulsed.

III.

The Conquest of Símlahgar.

The attacking column moved forward in the night of the 15th Rajab, commanded by Dilír Khán. Adam Khán tells the author that Dilír's elephant received twenty-five wounds. Farhád Khán and Aghar Khán were wounded. Dilír enters the fort, and Mir Murtazá opens the gate. The enemies fly. Mahmúd Beg pursues them. A good number of Musalmán men and women were found, whom the enemies had forced to remain with them.

The fall of Símlahgar broke the spirit of the hostile garrison of Chamdhurah. They fled.

The Nawáb entered Símlahgar on the 16th Rajab [26th February, 1662], and was astonished to see the strength of the fortifications. He then encamped at Kulyábar (كلیابری). Much war material was taken. No marauding whatever was allowed; in fact during the whole expedition, which lasted one year, the punishments inflicted on marauders were most severe.

Sayyid Naqíruddín Khán was made Faujdár of Kulyábar; and Sayyid Mirzá, Sayyid Nisár,* and Rájah Kishn Singh garrisoned Chamdhurah.

IV.

Victorious progress of the fleet. Arrival at Lak'húgar.

The Nawáb left Kulyábar on the 20th Rajab [2nd March, 1662]. On account of the hills along the banks of the Brahmáputra, the army had to march at some distance from the river, and was thus separated from the ships. It happened that Ibn Husain for some important reason was away from the fleet with the army, when suddenly, after evening prayer, on the 21st Rajab, 7 or 800 hostile ships attacked the fleet, which had just anchored. Munawwar Khán Zamindár and 'Alí Beg did their best till more ships came up. The cannonade lasted the whole night, and was heard by the army. The Nawáb sent Muhammad Múmin Beg (a servant of Yakahtáz Khan)

* The Bibl. Indica Edition of the '*Ālamgír-námah*' (p. 713) has 'Sayyid Tátár.'

to assist the fleet. He arrived at the first watch of the morning at a nálah near the river and the fleet, and told his trumpeters to blow. This decided the fate of the engagement. 300 or 400 ships, with a gun on each, were seized. The author was with the fleet.

The next day the army again approached the river.

The conquest of Sinlahgar and the defeat of their fleet disheartened the Asamese. They withdrew to the hills, and trusted to surprises and night-attacks.

The Nawab then reached *Solahgar* (سوله‌گو), where several Amirs came with letters from the Rajah—Amirs are called in Asamese *Phúkans* (پھوکن)—, and asked for peace. But it soon became evident that their object was to cause delay or a decrease in vigilance, in which hope they were disappointed.

On the 27th Rajab [9th March, 1662], the Nawáb reached Lak'húgar. Here eleven elephants of the Rajah were seized. A Brahman, an inhabitant of Dewalgaon and spiritual guide of the Rajah, came to the camp; so did Yalnoli Phúkan, who brought a *pándán*, a gold vessel, and two silver jars, 100 gold muhurs, and a submissive letter from the Rajah. But the letter was not deemed sincere, and a reply was sent that the Nawáb would soon be in Ghargáon, where alone he would treat with the Rajah.

Lak'húgar* lies at the confluence of the Dihing River with the Brahmáputra. The Dihing comes from the mountains north of Ghargáon, and he who goes to Ghargáon travels along the southern banks of the Dihing. Between the Dihing and the Brahmáputra is a tract (خزیرة) which stretches to the mountains of Námrúp, and is well cultivated.

Ghargáon itself lies on the Dik'ho Nálah, which 8 kos from the town joins the Dihing. It is very shallow, and the fleet was ordered to remain stationed at Lak'húgar, in charge of Ibn Husain Darogah, Jamál Khán, 'Alí Beg, Munawwar Khán, &c. The fleet consisted of 323 ships, viz.,

Carried forward.....		280
159 kosahs (کوسه)	palís (پلیل)	1
48 jalbahs (جلبه)	bhars (بهر)	1
10 ghrábs (غراب)	báláms (بالام)	2
7 parindahs (پرنده)	khatgiris (خطگیری)	10
4 bajrahs (بجره)	mahallgiris (محلگیری)...	5
50 patílahs (پتیله)	palwárahs (پلواره) and	
2 salbs (سلب)	other small ships	24
280	Total.....	323

On the 28th of this month, the sun entered Aries.

* Lak'húgar lies on the confluence of the Dihing and the Brahmáputra. The Dihing River, on Lieut. Wilcox's Survey map, published in Vol. XVI of the Asiatic

V.

The Conquest of Ghargāon.

On the 1st Sha'ban, 1072 [12th March, 1662], the Nawāb left Lak'hūgar, crossed the nālāh, and encamped at the Nāosāl, or arsenal, of the Rājāh. Next day, they came to Dewalgāon, where the spiritual guide of the Rājāh lives, crossed a nālāh, the water of which reached up to the saddles of the horses, and encamped on the banks. An idol temple and a fine garden, near the Dihing River, are the sights of Dewalgāon. There were plenty of orange trees, full of very large and unusually juicy oranges. They were sold in the camp at ten for a piece. 'Alī Rīza Beg was made Thānahdār of Dewalgāon.

Several Muhammadans of the place informed the Nawāb that the Rājāh kept a large number of Muslims imprisoned, and had fled with his valuables to Nām-rūp.

On the 4th Sha'ban [15th March], the Nawāb set out, and encamped at the village of Gajpūr. Farhad Khan and Mir Sayyid Muhammad Dīwan i tan, and other Amirs, were ordered to march quickly to Ghargāon, and seize upon the elephants and other property, which the Nawāb had heard were still there. Anwar Beg, a servant of the Nawāb, was made Thānahdār of Gajpūr. Four elephants were here also seized.

On the 5th Sha'ban, [16th March] the Nawāb encamped at Taramhānī (تورمهانی), which is the name of the confluence of the Dik'hō and the Dihing, and made Nūrullah, one of his servants, Thānahdār of Taramhānī. He collected here much cattle. Muhammad Muqīm was ordered to seize on Nāmdang,* a place between Taramhānī and Ghargāon and a nālāh, which comes from the hill and passes it.

Researches, forms with the Buri or Lohit Branch the Majoli Island. Mr. Peal informs me that the Lohit is the old bed of the Brahmaputra; the Dik'hō and the Disang fell into the Dihing, and the Majoli Island was joined to Murtok by an isthmus. On modern maps the name of Dihing is not used; the Lohit is looked upon as a branch, and the former Dihing branch is now called Brahmaputra. On no map have I found Lak'hūgar, which circumstance may be due to the shifting of the stream. But if it lay at the confluence of the modern Lohit and Brahmaputra, it can scarcely be identical with the Lockwa mentioned on p. 38; for the distance of the point of confluence from Ghargāon is more than a geographical degree. Nor can I find the place Solahgar, 'which lies between Kulyābar and Lak'hūgar.'

* Dewalgāon lies two miles N. E. of the point where the Ladhiāgarh crosses the Sionī Al (or Allī, which seems to be the word now-a-days used in Āsām). Gajpūr lies two miles from Jorhēt. At Gajpūr the Nawāb was on the Sionī Al; he then turned off to the Bor Al, on which Taramhānī must have been. Mr. Foster suggests to alter the Taramhānī of the MSS. to *Torah-hānī* (تورہانی), which means 'a feeding-ground.' The letters *he* and *ulm* are constantly confused in MSS., and Mr. Foster's conjecture does the reading of the MSS. no violence. It is also significant that at Taramhānī the Nawāb

At every station the road was intersected by *nālahs*; in fact they are so numerous, that I cannot mention each singly.

On the 16th *Shā'ban*, [17th March, 1662] the Nawāb entered Ghargāon. He crossed the *Dik'hō*, and went eastward, and occupied the Rājā's palace.

The next day many guns were recovered from the tanks into which the Rājā had thrown them before his flight; 82 elephants, and nearly three laes of rupees in gold and silver, were also found. The number of guns which were captured, from the starting of the expedition till the return, was 675, among them a large iron gun (توپ آهنی بچہ دار) the balls of which weighed 3 *mans*; 1343 *zambūraks*; 1200 *rānchangīs*; and 6570 matchlocks; 340 *mans* of powder; 1960 boxes with powder, in each box about 2 or 2½ *mans* of powder; 7828 shields; a large quantity of saltpetre, iron, sulphur, and lead; 1000 and odd ships, many of which accommodated 80, 70, and 60 sailors. Unfortunately 123 *bachhārī* ships, like which no other existed in the dock-yards at Ghargāon, were burned, some Asamese having set fire to the *chhappars* under which they were kept. About 173 store houses for rice were discovered, over which matchlockmen were placed as guards, each of the houses containing from ten to one thousand *mans* of rice. These stores proved very useful.

VI.

*On Āśām and its Inhabitants.**

Āśām is a wild and inaccessible country, cultivated only along the *Brahmāputra*, which flows through it from east to west. From *Gawahāṭṭī* to *Sadiāh* (سدیه) the distance is about 200 *kos*. The breadth from the hills, inhabited by the *Miris*, *Michmīs* [*Mishmīs*], *Dulāhs*, and *Landāhs*,† up to the

"collects cattle," and Mr. Foster tells me that according to the legends the *Bor Al* was expressly constructed to bring the Rājā's milk from the feeding grounds to Ghargāon.

The Nawāb then marches along the *Bor Al*, a magnificent road, to *Nāndāng*, for which the '*Alamgīrnāmah*' (p. 719) has '*Lāndāng*, and the '*Fathiyah*', '*Rāndāng*. The *Nāndāng* River flows into the *Dik'hō*, N. N. W. of Ghargāon. The distance of *Nāndāng* from the *Bānsghāṭ* of Ghargāon is about ten miles. At the place where the *Bor Al* enters the *Bānsghāṭ*, there is still a ruined fortified gateway, called the '*Singh Duār*,' from which the *Dik'hō* is about four miles distant.

* The greater part of this chapter is given in the '*Alamgīrnāmah*, from which it was translated into English by Mr. H. Vansittart in the *Asiatic Researches*, Vol. II, p. 171. But as his proper names are mostly wrong, I give here a full translation of the chapter as given in the more complete *Fathiyah i 'Ibriyah*.

† All MSS. have clearly *lāndah*. If the word is correct, it would refer to a tribe of Aborigines not mentioned in our Ethnological works. Col. Dutton, to whom I

district of the Nágá tribes, is about a journey of seven or eight days. Its southern mountains reach the Khasiah (خميه), Kachhár, and the Gonaser Hills* lengthways, and in the breadth, the Nágá Hills. Its northern mountains reach the high ridges of Kámrúp lengthways, and in the breadth the hills occupied by the Duffahs and the Lándahs.

The northern banks of the Brahmaputra form the Uttarkol; the southern, the Dak'hinkol. The Uttarkol extends from Gawáhattí to the country of the Mirís and Michmís; and the Dak'hinkol from the kingdom of Nakirání (نكيرانى)† to Sadiah. The hill tribes pay no tribute to the Rájah of Āsām, but regard him with awe, and submit to some of his orders. But the Duffahs do not obey him, and often make raids into the Rájah's territory.

The distance between Kulyábar and Ghargáon is well cultivated; everywhere are houses, gardens, and orchards. Along the sides of the road there

submitted this passage, says in a letter—"I cannot make out the word 'Lándah;' but from the relative position of the word with the names of the other tribes of the North bank, I think, the author must mean the Akas or Ankas; and if you read the passage thus "The breadth of Āsām from the hills inhabited by the (1) Mishmís, (2) Mirís, (3) Duffahs, (4) Ankas, to the Nágá Hills, &c.," you have the tribes in their proper geographical order. Your author includes only Upper and Central Āsām in his description of what he calls Āsām, excluding Kámrúp. This explains what might otherwise appear obscure when he says (in the following sentence)—"The northern mountains (*i. e.* those in which the Mishmís, Mirís, &c., dwell) extend to the high ridges of Kámrúp."

Regarding the Mirís, Mishmís, and Duffahs (Dophlas) the reader will find the fullest information in Col. Dalton's "Ethnology of Bengal."

* The text has کشمیر Kashmír; the MS. of the Asiatic Society has كاشمير Koshlér, or كنفشير Kanashlér. The *Khamtíndámah* boldly substitutes Srinagar (*i. e.*, Kashmir), which Vansittart also gives. But this is absurd. I have conjecturally translated *Gonaser Hills*, *i. e.* گوناشير Gunashir, following the MS. of the Asiatic Society. A part of what we now call the Garo Hills is evidently meant; and I find that Rennell,—but no modern map—calls the southern portion of the Garo Hills *Gonaser* (Map ix, of the Bengal Atlas). The order of his hills from the east is Kachhár Hills, Jaintiah Hills, Gonaser Hills, Karim Hills, Karibáí Hills. His Garo Hills are north of the Gonaser Hills. The word *Nágá* is spelt with a nasal *n*, 'Nánga;' hence Vansittart's *Nanae*. For his *Zembeh*, we have to read *Duffahs* دوفله, —a shifting of the dot.

† Col. Dalton says:—"The author again excludes Kámrúp from Āsām, and commences the Uttarkol from Gawáhattí. The modern Gawáhattí is on the south bank; but the ancient city, called Pragjotishpúr, occupied a vast area on both banks. Nakirání I cannot make out; it may, however, refer to Deshrání, a large parganah of Kámrúp, close to the modern Gawáhattí."

Col. Dalton's identification is confirmed by the author's wish to exclude Kámrúp from Āsām; hence the Dak'hinkol must commence with the Deshrání parganah. The name again occurs below in the articles of peace (p. 91)

are high bamboo-shrubs. There are many wild and cultivated flowers, and behind the bamboos, as far as the hills, there are fields and gardens. So it is also along the road from Lak'húgar to Ghargáon. There is a high and wide *ál*, or raised road, up to Ghargáon.

The fields and the gardens are made so even in this country, that the eye up to the far horizon rejoices to see neither depression nor elevation. On the whole, the Uttarkol is better cultivated; but as the Dak'hinkol is better fortified by nature and less easy to cross, the Rájahs of Āsām have generally lived in this part. The climate of all parts near the Brahmaputra is healthy for natives and strangers; but the districts remote from the river are deadly to strangers, though they may be healthy enough for the natives of the place. The rains often last for eight months; even the cold season is not free from rain.

In the cold season, fluxes and fevers attack the natives and spare strangers; in the hot season, strangers suffer more than natives, especially from bilious complaints. But the natives of Āsām are free from several disgusting diseases, as leprosy, white leprosy, elephantiasis, abscesses, swellings of the neck and the testicles, which last complaint is so common in Bengal, and from other diseases. The air and the water in the hills are fatal to natives and strangers. The fruits and flowers of Bengal are found in Āsām; but there are many that are neither to be had in Bengal, nor in other parts of India. Cocoanut and Nim are rare; but *filfil* (pepper), *sádaj* (spikenard),* and different kinds of lemons are common. The mangoes are plentiful, but full of worms; sweet ones without strings are rare. The pine apples are large and taste well; the black, red, and white sugarcane is sweet, but so hard as to break one's teeth; ginger is large and delicate, and not stringy either. Paniálals, a kind of ámlah, are very fine, and many prefer them to plums.

The staple food of the country is rice; but the superior kinds are rare. Wheat, barley, vetches, are not sown, though the ground is suitable for their cultivation. In fact, everything grows well. Salt is very dear. At the foot of the hills, salt is, indeed, found, but it has a bitter, biting taste. Some of the natives dry the *kelah* plant in the sun, burn it, and collect the ashes in a white sheet, which they fix on four poles. They then pour gradually water on the ashes, and catch whatever pereolates in a vessel below the sheet. The liquid is saltpetre-like and very bitter; but they use it as salt. Ducks and fowls are very large. Their fighting cocks are very plucky, and rarely run away. If a weak cock fight with a strong one and get its head broken and its brain scattered about, or be dying, it will never take its eyes from

* Vansittart says that *sádaj* is the same as *tezpát*, *Laurus cassia*, laurel leaf. Sir W. Jones has an article on the Asamose spikenard in the *Asiatic Researches*, Vol. II, 405.

the opponent or show its back. Elephants are large and numerous in a wild state in the hills. Gazelles, stags, nilgáos, and wild goats, are rare.

In Ghargáon there were several cage-like enclosures, secured with strong and high poles. It is said that some elephant drivers of the Rájah rub a certain kind of grass over the body of a female elephant, and let her go among wild elephants when they rut. As soon as they smell the scent of the grass, they will run after her, and will even follow her to the enclosure to which the driver leads her, when they are caught. The Nawáb tried in vain to get hold of one of the drivers.

Gold is found in the Brahmáputra; about ten thousand people are employed in the washings. Each man makes in the average a *tolah* of gold *per annum*, and hands it to the Rájah. But the gold is not fine, and sells for 9 or 8 rupees *per tolah*.

Cowries are in use; and rupees and mohurs, coined by the Rájah, are current. Copper is not current. In the hills of the Miris and Michmis who live in Eastern Ásám, in Uttarkol, about eleven days' journey from Ghargáon, musk deer and wild elephants are found. Silver, copper, and tin (ارزین) also are obtained in their hills. The way these people live, resembles the way of the Asamese. Their women are generally better looking than the women in Ásám. They dread matchlocks, and say, "A matchlock is a thing that makes a great noise, and does not stir from its place, whilst a child issues from its womb that kills a man." The musk deer is also found in the mountains of Ásám. The musk bags are larger than large [gram] grains, and have a fine colour and perfume. Lignum aloes, which is chiefly found in the mountains of Námbrú, Sadiah, and Lak'húgar, is heavy, coloured, and has a strong scent.

If Ásám were administrated like other parts of the empire, it is quite possible that the land-tax and the revenue from wild elephants and other imposts might amount to 45 lacs of Rupees.* It is not customary to levy taxes from the inhabitants; but of every three people in each house one is taken for the service of the Rájah. If a man is lazy in what he is told to do, capital punishment is immediately inflicted; hence the absolute sway of the Rájah.

No Indian king in former times ever conquered Ásám. Even the intercourse of foreigners and the Asamese was very limited. They allow no stranger to enter their territories, and prevent their own people from leaving the country. Once a year, at the order of the Rájah, a party of Asamese used to visit the neighbourhood of Gawahattí and the boundary of the

* Last year's revenue of the whole Ásám Division, which contains the districts of Darrang, Kámrúp, Lak'himpúr, Nangáon, and Sibságar, in addition to the Nágá, Khasia, and Jaintiah Hills, amounted to nearly 21 lacs (Rs. 20,93,371).

country, bringing gold, musk, lignum aloes, filfil, sādaj, and silk. These articles they gave in exchange for salt, saltpetre, sulphur, and other things, which the people of Gawahattī used to furnish. But all armies that entered Āsām perished, and no caravan ever got safe out of it. If an army invaded the country, it was exposed to continual night attacks; or the people withdrew to the hills, and waited for the beginning of the rains, when the soldiers were sure to die or could easily be cut off.

Thus Husain Shah, one of the kings of Bengal, invaded Āsām with 24000 foot and horse and numerous ships. The Rājah withdrew to the hills. Husain Shāh, therefore, took possession of the country, left his son there with a strong detachment, and returned to Bengal. As soon as the rains set in, the Rājah came down from the hills and, assisted by his own people, who had of course submitted to Husain's son, killed the prince, starved the army, and managed to capture or kill the whole of them. It is said that the people who are now called Moslems in Āsām, are the descendants of the captives of Husain's army.*

It is from the misfortunes which have invariably befallen those who entered Āsām, that the people of India have come to look upon the Asamese as sorcerers, and use the word 'Āsām' in such formulas as dispel witchcraft.

The Āsām Rājahs have always been insolent and proud of their power and the number of their men.

The present Rājah, Jaidhuj Singh, is called Sargī Rājah, because *sarg* in Hindī means 'heaven.' The fellow believes that one of his ancestors commanded the heavenly host, and descended from heaven on a golden ladder; and as he found the country beautiful, he remained there instead of returning to heaven. The present Rājah is much prouder than his ancestors: for a slight fault he will destroy a whole family, or on suspicion throw people into fetters. His wife only gives birth to daughters, and has no son; hence the

* *Vide* Prinsep's list of the Āsām Rājahs, p. 273, of Thomas's Edition of Prinsep's Useful Tables. His list is based upon the *Āsām Bāsanjī*, or Āsām Chronicle, by Huliśām Dhaikiyāl Phūkān, of Gawāhattī. Another *Āsām Bāsanjī*, or history of the kings of Āsām, was compiled by Śrī Radhamath Bar Baruwā and Kāsīnath Tāmuli Phūkān, (printed by the American Baptist Mission Press, Sibsāgar, Āsām 1844, 8vo, 102 pp.).

Husain's invasion is generally referred to A. D. 1498, and his son's name is said to have been Dalāl (Julāl, ?) Ghāzī.

The *Alumgir-nāmah* and the Āsām Histories speak of an invasion of Āsām by Muhammad Shāh (A. D., 1337). The former work says (p. 731) "Muhammad Shāh, son of Tughluq Shāh, sent 100,000 horse well equipped to Āsām; but the whole army perished in that land of witchcraft, and not a trace was left of the army. He sent a second army to avenge the former disaster; but when they came to Bengal, they would not go farther, and the plan had to be given up."

Thus it would seem that Muhammad Tughluq intended to invade China viā Āsām. *Vide* Dowson, Elliot's History, Vol. III, pp. 241, 242.

word 'succession' has a bad name in Asám, especially as there is no male relation in the whole family. He professes to be a Hindú; but as he believes himself to be one of the great emanations of the deity, he worships no idols. The inhabitants profess no religion whatever. They eat whatever they get, and from whomsoever it be, following the bent of their uncivilized minds. They will accept food from Muhammadans and other people; they will eat every kind of flesh except human, whether of dead or killed animals. They taboo butter, so much so that they refuse food, if it only smells of butter.

The language of the Asamese differs entirely from the dialects spoken in Eastern Bengal.

The males are strongly built. They are quarrelsome, fond of shedding blood, fearless in allays, merciless, mean, and treacherous: in lies and deceit they stand unrivalled beneath the sun. Their women have mild features, but are very black; their hair is long, and their skin soft and smooth; their hands and feet are delicate. From a distance the people look well; but they are ill-favoured as far as proportion of limbs is concerned. Hence if you look at them near, you will call them rather ugly. Neither the women of the Rajah, nor those of common people, veil themselves; they go about in the bazars without head-coverings. Few men have less than two wives; most have four or five. The several wives of a man will carry on sales and barter among each other.

In paying respect, the Asamese bend the knees; and when the subjects go to the king or the *phúkans*, they bend their knees, sit *dozánú*, and fix their eyes on the ground. They shave the head and beard and whiskers; and if a man only departs a little from this custom, they call him Bengalized and kill him.

Asses, camels, horses, are as rare in Asám as phoenixes; but like asses they will admire a donkey and pay a high price for it. If they see a camel, they get quite excited in their admiration. They are afraid of horses. If they catch one, they cut through the sinews of the feet; and if a horseman attack a hundred armed Asamese, they will throw down their arms, and run away; but if one of them should meet ten Muhammadans on foot, he will fearlessly attack them and even be victorious.

To sell an elephant is looked upon as a heinous crime. The Rajah and the Phúkans travel in *singhásans*, and chiefs and rich people in *dúlís*, made in a most ridiculous way. They use a kind of chair instead of howdahs. Turbans, long coats, trowsers, shoes, and sleeping on *chápáis*, are quite unusual. They use a coarse cloth for the head, one for the waist, and a sheet for the shoulders. Some of the richer people wear a kind of half coat, which resembles our *Náqúbbháni* jacket. Those who can afford it, sleep on a wooden dais.

They eat *pān* in large quantities with unripe *supārī*, unshelled. They weave excellent flowered silk, velvet, *ṭāḥbands*, and other silks. Boxes, trays, stools, chairs, are cleverly and neatly made of one piece of wood. I saw several stools belonging to the Rājā, two cubits broad; even the feet were cut out of the same piece, and not merely joined to it.

Their war-sloops resemble the Bengali *kosahs*. They call them *bachārīs*. The difference is only this that at the poop and the stern, the *kosah* has two planks (خَش, *pr.* branches); but the poop (*sar*) and the *keel* (بُن) of the *bachārīs* are made of one flattened plank. They are slower than *kosahs*. The shipping traffic may be estimated from remarks taken from the reports of the Waqī'ah-nawīs of Gawahāṭṭī for Rama-zān last. He says that, up to the present time, no less than 32,000 boats, *bachārīs* and *kosahs*, have arrived here. The number of ships engaged for the army, and those belonging to the Asamese which accompanied the army on its return, must certainly have been larger; and it is probable that more than one half belonged to Asamese. The ships are built of *chambal* wood (چنبَل, MS. چنبَل); and a ship built of such wood, no matter how full it is, will never, on sinking, remain at the bottom of the water. This fact was examined by many, and by me, too. Their matchlocks and *bachahdār* guns are well cast, and the people show much expertness in the manufacture. Their powder is of several kinds; for the best kind they import the components from his Majesty's country.

With the exception of the gates of Ghargāon and some idol temples, houses in Asam are not built of bricks or stones and mortar. Rich and poor build their houses of wood or bamboo or grass.

The ancient inhabitants of this country belong to two nations, the Asamese and the Kulitá (كَلْتَا)*. The latter, in all things, are superior to the former, except where fatigues are to be undergone, and in warlike expedi-

* "The Kolitas are the only pure descendants of the Aryans who first colonized Asām. They were dominant there for many centuries, and had evidently arrived at a high state of civilization when the inroads of the Mongolians commenced. There was a Hindu Pāl dynasty in the upper portion of the valley with their head quarters at Sadiah, who succumbed to a Chutiā or Kachāri invasion, probably about the same time that the Kāmṛp Hindu dynasty was subverted by the Koch. Afterwards the Shans conquered the valley from Sadiah to Kāmṛp, and on the retreat of the Muham-madans invaded and took possession of Kāmṛp. These Shans after their first successes called themselves the 'Ahom,' or 'the non-equalled people,' and hence the name of Asām." Vide Col. Dalton's *Ethnology of Bengal*, Group II, Sect. I.

The interchange of *s* and *h* is very common in Asamese; several other examples will be found below. It is curious that the same interchange of *h* and *s* should be found in Asam, the farthest east, and in Sindh, the farthest west; for it is Sindh, country and river, which, in its pronunciation *hind*, induced the Greeks to call the whole country *India*.

tions, in which the former are better. Six or seven thousand Asamese guard the environs of the palace and the harem of the Rājāh. The guards are called *jauḍāṅgs* (چودانگ),* and are the trusted and devoted servants and executioners of the Rājāh. The arms used by the people are matchlocks, rānchangīs, guns, arrows with ironpoints and without them, half swords, long lances, bamboo bows, and *Tukhsh* arrows. At the time of war, all trades people and well-to-do peasants, and farmers, with or without armour, have to serve, whether they will or not.† Like jackals, they will commence a tremendous howl, and will like foxes think that the noise frightens the lions of the bush. A small number of their fighting men may indeed checkmate thousands; they are the *aḡal* Asamese; but their number does not exceed 20,000.‡ They are given to night attacks, for which they especially believe the night of Tuesday to be auspicious. But the common people will run away, with or without fighting, and only think of throwing away their armours.

They bury their dead with the head towards the East and the feet towards the West. The chiefs erect funeral vaults (دخمه) for their dead, kill the women and servants of the deceased, and put necessaries, &c., for several years, *viz.* elephants, gold and silver vessels, carpets, clothes, and food, into the vaults. They fix the head of the corpse rigidly with poles, and put a lamp with plenty of oil and a *mash'alchī* [torchbearer] alive into the vault, to look after the lamp. Ten such vaults were opened by order of the Nawāb, and property worth about 90,000 Rupees was recovered.§ In one vault in which the wife of a Rājāh about 80 years ago had been buried, a golden *pāndān* was found, and the *pān* in it was still fresh. This fact was related by Payandāh Beg, Assistant Wāqī'almawīs, and by Shāh Beg, at an evening

* *Vulgo* Sowdāṅgs.

† *Vide* Robinson's *Descriptive Account of Asam*, p. 200. Robinson's work is a very valuable book. The author died in Āsām of fever, and lies buried in Mr. Foster's compound in Názirah, Upper Āsām.

‡ "What the Persian Historian says of the physical superiority of the Asamese over the Kolitās was, no doubt, quite true at the time; for the Asamese were then a hardy, meat-eating, beer-drinking, fighting race, and the Kolitās were effeminate subjected Hindūs." From a letter by Col. Dalton. Regarding the Kolitās, *vide* Col. Dalton's *Ethnology of Bengal*, last group.

§ "The account of the burial of Ahom magnates is confirmed by more recent disclosures of desecrated graves. About twenty years ago, several mounds, known to be the graves of Ahom kings, were opened and were found to contain not only the remains of the kings, but of slaves, male and female, and of animals that had been immolated to serve their masters in Hades; also gold and silver vessels, food, raiment, arms, &c., were not wanting." From a letter by Col. Dalton.

An account of the opening of some of these tombs will be found in the *Journal of this Society*, Vol. xvii, Pt. I., p. 473.

party given by the Nawāb; and Rasmi Beg, who received the *pānd'in*, told me the same.

The Muslims whom we met in Āsām, are Asamese in their habits, and Muhammadans but in name. In fact they liked the Asamese better than us. A few Musalmān strangers that had settled there, kept up prayers and fasts; but they were forbidden to chant the azān and read the word of God in public.

The town of Ghargāon has four gates built of stone and mortar, the distance of each of which from the palace of the Rājāh is three *kos*. A high and wide *āl*, very strong, has been made for the traffic (برای تردد مردم); and round about the town, instead of fortifications, there are circular bushes of bamboos, about two *kos* in diameter. But the town is not like other towns, the huts of the inhabitants being within the bamboo bushes near the *āl*. Each man has his garden or field before his house, so that one side of the field touches the *āl*, and the other the house. Near the Rājāh's palace, to both sides of the Dik'ho River, are large houses. The bazar road is narrow, and is only occupied by *pān*-sellers. Eatables are not sold as in our markets; but each man keeps in his house stores for a year, and no one either sells or buys. The town looks large, being a cluster of several villages. Round about the palace, an *āl* has been thrown up, the top of which is fortified by a bamboo palisade instead of by walls, and along the sides of it a ditch runs, the depth of which exceeds a man's height. It is always full of water. The circumference is 1 *kos*, 14 *jaribs*. Inside are high and spacious *chhappars*. The Diwānkhānah of the Rājāh, which is called *solang*, is one hundred and twenty cubits in length and thirty wide inside. It has sixty-six pillars, each about four cubits in circumference. The pillars, though so large, are quite smooth, so that at the first glance you take them to be planed (خروطی). Now though the Asamese understand planing, yet you cannot believe that they did smoothen the pillars in this way. The ornaments and curiosities with which the whole woodwork of the house is filled, defies all description: nowhere in the whole inhabited world, will you find a house equal to it in strength, ornamentation, and pictures. The sides of this palace are embellished by extraordinary wooden trellice work. Inside there are large brass mirrors highly polished, and if the sun shines on one of them, the eyes of the by-standers are perfectly dazzled. Twelve thousand workmen are said to have erected the building in the course of one year. At one end of the hall, rings are fastened on four pillars opposite to each other, each pillar having nine rings. When the Rājāh takes his seat in the hall, they put a dais in the middle of these four pillars, and nine canopies of various stuffs are fastened above it to the rings. The Rājāh then sits on the dais below the canopies. The *naqqārachīs* (drummers) strike the drum and the *dānd*. The latter instrument is round and

flat, and made of *cūn* metal, and is struck like a gong. The instrument is used when the audience commences, or when the Rājā issues forth, or the Phūkans ride out, or leave for an appointment. Mullā Darwish i Harawī [a poet who accompanied the expedition] says that these *dinds* must be the very identical metal plates* that are mentioned in the *Shah-nāmah*; but God knows best. There are other houses in Ghargāon, beautifully adorned, strong, very long and spacious, full of fine mats, which really must be seen. But alas, unless this kingdom be annexed to his Majesty's dominions, not even an infidel could see all these fine things without falling into the misfortunes into which we fell. Beyond the enclosure of this hall there is another house, the dwelling-house of the Rājā. It is a fine and beautiful house. The Phūkans have erected dwellings in its neighbourhood. Each Phūkan is a son-in-law of the Rājā, and has a beautiful garden and a tank. Indeed, it is a pleasant place. As the soil of the country is very damp, the people do not live on the ground floor, but on the *machān*, which is the name for a raised floor.

VII.

Advance of the army to Mal'hurápūr. Erection of Thánahs.

The Rājā had first intended to fly to the Nágā Hills, but from fear of our army, the Nágās would not afford him an asylum.

The Nágās live in the southern mountains of Āśām, have a light brown complexion, are well built, but treacherous. In number they equal the helpers of Yagog and Magog, and resemble in hardness and physical strength the 'Adīs [an ancient Arabian tribe]. They go about naked like beasts, and do not mind to copulate with their women in the streets and the bazars, before the people and the chiefs. The women only cover their breasts,† as they say that it would be absurd to cover those limbs which every one might have seen from their birth; but this was not the case with the breasts, which since then had formed and should, therefore, be covered. Some of their chiefs came to see the Nawab. They wore dark hip-clothes (لنگ), ornamented with cowries, and round about their heads they wore a belt of boar's tusks, allowing their black hair to hang down over the neck. The chief weapon of these people is the short mace (ژوبین).

* Vide Kin translation, p. 562, note 1.

† "I have seen Nágās to the south of Sibságar who answer to the description of that people by the Persian historian. Both sexes go quite naked. The women I did not see; but I recollect having heard that when seen by strangers, they folded their arms across their breasts, and were regardless of what else was exposed." From a letter by Col. Dalton.

The illustrations to Col. Dalton's 'Ethnology of Bengal' and the specimens of Nágā dress in our museum, show that the boar's tusks mentioned below are a very common ornament for caps. They also protect the head.

The Rājah had, therefore, fled with the Phúkans to Nám-rúp.* This Nám-rúp may be called a part of hell. It lies in the hollow of three high ridges, and its climate is worse than that of the well of Babel. The Asamese say, "if a bird flies over it, bats will yield their lives, and if steel enters the ground, it turns to wax." The Rājahs used to banish to Nám-rúp those whom their sword had spared.

There is only one road in the country† along which a horse can pass, and this road leads to Batám (باتام),‡ north of Ghargáon. The beginning of this road leads for half a *kos* through a jungle so dense that you can scarcely 'think' yourself through it. Afterwards comes a pass extending for five or six *kos* full of stones and mud, two high mountains being on either side. There some of the rebellious people of the southern mountains under the Bargosáin [principal noble] had established themselves, whilst the Phúkans with a great number of men had encamped on an 'island' between the Brahmáputra and the Dihing River.

About this time it rained for three days and nights, and living in tents was impossible. The intention of the Nawáb was to spend the rainy season in Lak'húgar; but the Mutagaddis reported that there would be no time to transport the conquered material, and secondly, the wild elephants could not well be brought to move properly. In any case, it was clear that it would be impossible to reach Lak'húgar before the commencement of the rains.

It was, therefore, resolved to move to Ma'harapúr, which lies $3\frac{1}{2}$ *kos* beyond Ghargáon at the foot of a mountain, towards the south-east. A party was left behind in Ghargáon. The author also stayed behind for reasons which are not explained. A great number of guns were sent on to Jahángirnagar. The Nawab had also rupees and pice struck with the name of his Majesty on them. Mír Murtazá in Ghargáon was to take charge of all such stores as were to be kept and sent on to Jahángirnagar; Miyánah Khán was sent to Mauza' Salháti,§ which lies at the foot of the hills, south of Ghargáon, and was held by the Bargosáin and other accursed people; Ghází Khán was sent as thánahdár to Mauza' Deopani,|| between Ghargáon and Salháti; and Jakul Khán of Daryábád was to guard the Dihing River.

* Nám-rúp is the most eastern part of Asām and scarcely known. Vansittart in his translation confounds it with Kám-rúp (Western Asām), which he substitutes for it. His *Dhanc* is the 'Dihing.' His *Nawac* are the Nágás.

† This seems to refer to the Ladhiágarh road, which now forms the boundary between the British and Independent Territories.

‡ The name is doubtful. The MSS. have every possible diacritical mark for the word, Niyám, Nipám, Batám, Banám, Biyám, Panám, Patám, &c.

§ For *Salháti* the 'Klamgírámah has, perhaps correctly, *Salpánt*.

|| So the 'Khamgírámah (p. 735). The Fathiyah i 'Driyah has *Deotánt*. But Deopani is evidently the correct name. It still exists, and lies due south of Síbságar, at the foot of the hills, and S. S. W. of Ghargáon. It is now a tea garden in possession

On the 20th Sha'bán, the Nawáb moved to Mat'hurápúr, and Ádam Khán marched eight *kos* farther towards Parganah Abhipúr.* He had repeatedly to fight with the Asamese. The enemies also made night-attacks on Jalál Khán from the other side of the Dihing. But they were every time repelled, and Jalál Khán and his Daryábádí men became objects of terror for the Asamese. Miyánah Khán's position at Sallhāṭi protected the inhabitants of that district. On the whole, the Dak'hinkol was in the hands of the Imperialists, and the inhabitants were satisfied with their condition. The people of Uttarkol also thought of submitting, but fate decreed otherwise.

VIII.

The rains set in.

At the beginning of the rains, the Asamese made a night attack upon 'Alí Rizá, the Thánahdár at Dewalgáon, who was enforced by a detachment, which the Nawáb sent him under Yádgár Khán Uzbek.

A flotilla with provisions sent by Ibn i Husain under the command of Muhammad Murád from Lak'húgar, arrived safely at Ghargáon [up the Dik'ho].

On the 1st Shawwál, an attack was made upon Anwar Beg, Thánahdár of Gajpúr. He and his men were killed. Gajpúr thus fell into the hands of the Asamese, who now made trenches on the other side of the Dihing as far as Lak'húgar, in order to cut off the supplies of the army. Sarandáz Khán Uzbek was at once sent off by the Nawab to recover Gajpúr. He reached Mauzá' Tik,† beyond which he could not pass without ships on account of the mud in the malahs. The Nawab ordered Muhammad Murád to go with several ships to his assistance. But the two commanders could not agree, and on the 14th Shawwál, Sarandáz Khán went back to Tik, and Muhammad Murád pushed forward. He was suddenly attacked at night by the Asamese; his men were in the greatest confusion, and his whole fleet was captured and the sailors were killed. Only a few Afgháns escaped to bring the tale of the disaster to Dewalgáon. The Dihing River in the meantime rose, and the Asamese attacked the Daryábádís at Sallhāṭi, whilst the water that rushed

of the 'Assam Company.' Mr. Foster tells me that according to a native tradition, five Asamese once went up to the hills to make a *phújā* and curse a deity, when a little stream suddenly rose and engulfed them. The little stream was called Deepání.

* On the maps Obeypore, S. E. of Ghargáon. The name is very frequent in the whole district south of Sibságar.

When Aurangzib received the Nawáb's official reports, he made him a commander of 7000, 7000 horse, 5000 *dauspah* *síhaspah* troopers, and added to his *jágir* certain mahalls the revenue of which was 1 *kror dáms*, or 2½ *laes* rupees. '*Alamgír-námah*, p. 741.

† Evidently the Tiok River, 3 miles above Gajpúr. The '*Alamgír-námah* (Bibl. Indica Edition, p. 779) has *تیك* for *تيك*.

down the mountain caused the men great inconvenience. Nay, the enemies were even bold enough to shew themselves near Ghargáon, and it required every care on the part of Mir Murtazá to prevent mischief.

Ghází Khán, the Thánahdar of Deopáni, who had 20 horse and 50 foot, was attacked by 10 or 12,000 Asamese, under the son of the Bargosáin's brother. Their leader was at the time of the attack far in advance of his men, and encountered Ibráhím Khán, one of Ghází Khán's men, gave his horse a swordcut over the head, and brought Ibráhím down. But jumping up quickly, Ibrahim ran against the leader, threw him on the ground, and finished him with his dagger. The Asamese saw their leader fall, and without coming to his assistance, retreated and watched for a better opportunity.

At this time, the population of Ghargáon, Mat'hurápúr, and Ádam Khán's thánahs commenced to leave their houses at night.

A rumour was also current that Bhím Naráin of Koch Bihár had returned and driven away the Imperialists. The rumour proved in the end to be true. The officer in charge of Koch Bihar, after the Nawáb had left, commenced the *jam'bandi* (financial settlement) of the country; but the people did not understand the new way of assessing them, and dispersed in rebellion; and when the Rájah returned to the foot of the hills, they gathered round him, and attacked and killed Muhammad Qálih, the Officer who, at Kanthalbári, tried to intercept the Rájah. They then cut off the supplies of Isfandiár Khán. The Rájah wrote to him that he should not unnecessarily court danger, and would do better to retreat; and Isfandiár profiting by his advice, retreated to G'horág'bát. 'Askar Khán soon followed him.

The Nawáb strengthened Ghází Khán's thánah by a detachment under Abul Hasan, Mirzá Beg's *khálú* (maternal uncle); for the Asamese had thrown up trenches opposite the thánah, and were continually on the alert.

Another detachment under Sayyid Sálár was sent to Ghargáon.

IX.

Farhád Khán marches towards Lak'húgar, and returns safely.

The Nawáb, on hearing the result of Muhammad Murád's expedition, despatched Farhád Khán and Qaráwal Khán with a strong detachment towards Lak'húgar, to keep the roads clear for the supplies. They were also to assist Sarandaz Khán in getting to Gajpúr, and send reinforcements to the thánahs under Mir Núrullah and Muhammad Muqím.

On the 18th Shawwál, [27th May, 1662] Farhád Khán, in spite of a dreadful storm, reached Ghargáon, crossed the same night the Dik'ho, took up Abul Hasan, who was on his way from Deopáni to head quarters, and reached with great trouble Mauza' Tik, which lies between Taramháni and Gajpúr. Sarandáz Khán joined the corps. The Asamese made their ap-

pearance in their trenches, and their ships under a renowned Phūkan commenced to fire.

Fighting continued for several days. The Rājputs of Rājah Subhān Singh distinguished themselves. Forty-one ships captured. Farhad arrived at the thānah of Muhammad Muqīm, from whom he heard that the inhabitants of the district had been away for some days, but had just come back with many wounded. Farhad Khān therefore sent Muhaammad Mūmin Beg into the villages, as it was clear that they had been fighting against him. All males were killed and the women were carried off.

On the 2nd Zi Qa'dah, [9th June, 1662] Farhad Khān returns to the Nawāb. The captured women were let off.

X.

The roads entirely closed. The Thānahs are drawn in.

With the progress of the rains the thānahs had to be drawn in. At the Nawāb's order, Ādam Khān was to leave Abhipūr and join head quarters. The other thānahs were to join the corps at Ghargāon, whilst Sarandāz Khān and Miyānah Khān were to guard the other banks of the Dik'ho. Jalāl Khān, Ghāzi Khān, and Muhammad Muqīm, should occupy this side of Dik'ho, and be under Mīr Murtazā's orders.

This is done with difficulty. Sarandāz Khān and Miyānah Khān occupy a piece of land surrounded on three sides by the Dik'ho Nahā,* and shut up the fourth side by a strong wall. The whole country is now re-occupied by the Asamese, only Mat'hurāpūr and Ghargāon being in the hands of the Imperialists. If a man dared to leave the camp, he was certain to be shot by the Asamese. A similar case never happened before in the history of Dihlī. Here were 12,000 horse and numerous infantry locked in for six months, prevented by the rains from continuing operations, and yet scarcely attacked by the enemies that surrounded them. Nor did during this time provisions arrive. "The Amīrs turned their eyes longingly to Dihlī, and the soldiers yearned for their wives and children."

The Asamese were under orders of the Phūkan Bījḍilī, an Asamese Brāhman, whose father had risen from a storekeeper to be a noble. The Rājah himself had come from Nāmṛup and taken up his abode in Solāgorī (সোলাগুরী),† which in former times had been the capital of the Asamese Rājahs. It lies four stages from Mat'hurāpūr and Ghargāon. The Rājah had called up the whole population and placed them at Bījḍilī's disposal. This commander's head quarters were at the Dillī (দিল্লী) River, which issues from

* Evidently the modern Názirah. Mr. Foster tells me that traces of the wall which closed the fourth side still exist.

† Solāgorī lies north of Ghargāon on the Dísang. It is often called Húlāgorī, according to the interchange of *s* and *h*, above alluded to.

the hills, passes Mat'hurápur, and flows into the Dihing. It is a dangerous river in the rains, though at other times it is scarcely knee-deep. He had thrown up trenches, and had built a strong wall three *kos* long, one end of the wall extending to a mountain, and the other to the place where the Dillí joins the Dihing. He had also cut every where the banks of the river, and made them so steep, that no man, much less a horse, could get up. He had several times at night attacked Dilir Khán, but was repulsed.

Rájah Subhán Singh drives away the Cháráng Rájah who threatened Ghargáon. The Charangs (چارنگ) are an Asamese tribe living in the southern mountains, and their zamindár holds from the Rájah of Āsám the title of Rájah.

The author says that it is impossible to relate the minor affairs which almost daily occurred.

Once Phúkan Bijdilí sent an ambassador to the Nawáb, and asked for cessation of the hostilities. Khwájah Bhor Mall took the Nawáb's answer, which was that he agreed to stop hostilities on receiving five hundred elephants that had still their first teeth; thirty laes of tolahs of gold and silver as *peshkash*; a daughter of the Rájah for the harem of his Majesty; a yearly tribute of fifty elephants with their first teeth; and lastly, a promise to cede that portion of Āsám over which the Imperialists had passed. The Rájah was to keep Námrip and the whole of the mountainous districts to himself.

Bhor Mall went, and was received with great honor by the Phúkan, with whom he remained for half a night alone. The Phúkan approved of the articles, and said that should the Rájah not accept them, he would himself come and join the Nawáb.

Bhor Mall returned after two days. But in the meantime the epidemic had broken out, and the Nawáb moved to Ghargáon; and as the Asamese looked upon this movement as a sign of weakness, Bijdilí did not come, as he had promised.

XI.

Condition of the army at Ghargáon.

The Asamese in their continual attacks upon Ghargáon had succeeded in burning down several houses of the Rájah and the Phukans outside the enclosure. On the 7th Zí Qa'dah [14th June, 1662], Farhád Khán, Sayyid Sálár, and Qaráwal Khán had arrived, and Mír Murtazá prepared to protect the town more efficiently. The north-western part of the town being principally subject to attacks, a bamboo fort was erected, of which one end reached as far as the Dik'ho and the other to the northern corner of the palisade of the palace. Many of the inhabitants also, who suffered in the attacks, were transferred by Mír Murtazá inside the enclosure, notably so the inhabitants of Mauza'Cháchní (چاچنى) who were transferred from beyond

the ditch to the north side of the enclosure of the Rājā's palace. In one night attack, the Asamese entered the bamboo fort, and occupied half of Ghargāon. The confusion was extreme, as Mir Murtazā could not find out where the enemies chiefly were, when an Asamese set fire to the large chhappars of the Rājā's palace, and the dark night became clear as day.

Account of how they were repulsed. Farhād Khān wounded in the hand. Further immediate fortifications. The night attacks continue without interruption. The Dillī Nālāh and the Dāndkā* Nālāh, which flows into the Dihing about one *kos* north-east of Ghargāon, were especially attacked by the Asamese. The Dāndkā Nālāh had a bridge which allowed communications to go on between Ghargāon and Maṭ'hurāpūr. One night the Asamese broke it up; but it was immediately rebuilt and guarded day and night. Several store-houses were burnt by the enemies.

Detailed description of a general night attack on Ghargāon on the 5th Zī Hajjah [12th July, 1662]. Repulsed with great difficulties.

The enemies cross the Dillī, and throw up a trench on the Kākūjān Nālāh, which flows between the Dillī and the Dāndkā.

Renewed night attack on the 8th Zīl Hajjah [15th July]. Farhād Khān's wounds did not allow him any longer to remain in command, and he repeatedly asked the Nawāb to relieve him. Rashīd Khān arrived on the 11th with reinforcements. Farhād went next day to Maṭ'hurāpūr. Daily attacks. On the 16th [23rd July], Rashīd Khān succeeds in taking the trenches on the Kākūjān Nālāh, and 170 prisoners are taken whom the author takes the next day to the Nawāb, who sent them back. The chiefs among them were fettered and the others impaled on the Dāndkā Nālāh.

XII.

Affairs in Lak'hūgar. Condition of the fleet.

When Anwar Beg, the Thānahdār of Gajpūr, had been killed, Ibn i Husain despatched a flotilla under 'Alī Beg to take Gajpūr and destroy the fort which the Asamese had erected. 'Alī Beg went, but as he was not immediately successful, he encamped the night outside the fort, his ships anchoring at Bānsbāri, which lies between Dewalgāon and Gajpūr. A few ships were taken from the enemies, among them several of Muhammad Murād's ships. Yādgar Khān moves from Dewalgāon, and joins Ibn i Husain at Lak'hūgar, who fortifies his camp. Repeated attacks on Solahgar on the part of the Imperialists. Demonstration of the people in favour of the invaders.

On the 7th Muharram, 1073 [12th August, 1662], Sayyid Naqiruddīn Khān died. Several attacks repulsed. The Bargosāin brought in. Yādgar

* The Bibl. Ind. Edit. of the *Atamgīrudāmāli* has 'Dāndkālah Nālāh.

Khán again occupies Dewalgáon. A report of his success was sent to the Nawáb, who received it in the beginning of Çafar [September, 1662] at Ghargáon.

XIII.

Epidemic at Ghargáon and Mat'hurápúr. Return of the Nawáb.

Mat'hurápúr lies high and was properly speaking an excellent place for an encampment. But it was soon found that the air of the surrounding jungles and the water from the mountain itself were unhealthy. The mountain is called 'Jur Parbat,' which in Asamese means 'fever mountain.' The men soon suffered from severe fever, and the casualties became numerous. Thus in the beginning of the war, Dilir Khán's detachment consisted of nearly 1500 horse; but at the end of the rains and his expedition to Námrip, he only mustered between 4 and 500. Of the people also an unusual number died, and Bhor Mall had heard from Phúkán Bijidli that the present year was exceptionally unfavourable to all. Food, though it was not scarce, was limited to a few things, and some articles were only to be had at fabulous prices. Thus butter sold at 14 Rupees *per ser*; *másh*, 1 R.; opium *per tolah*, 1 gold muhur; 1 *chillum* of tobacco, 3 Rs.; *dálmang*, 10 Rs. *per ser*; salt, 30 Rs. *per ser*. The only thing the army had was *sháli*. Many horses died.

It was altogether an extraordinary year, and famine even raged in Jahángirnagar.

The Nawáb, therefore, found it necessary to leave Mat'hurápúr, and marched on the 12th Muharram, 1073, [17th August, 1662] to Ghargáon. One fourth of the stores of *sháli*, for want of conveyance, had to be left behind. Many wounded and sick people were also left in Mat'hurápúr, and it has never become known what their fate was, when the Asamese occupied the place. Several guns also stuck in the mud,* the cows that pulled them having no strength from want of food. At night, the Nawáb stayed at a house belonging to the Rájah, one *kos* from Ghargáon, and Dilir Khán who commanded the rear, was ordered to look after the guns, as the Nawáb had resolved to wait where he was till all the guns had been brought up. The rain was fearful. Dilir Khán told the Nawáb that he would look after everything, and on the 13th Muharram, the Nawáb entered Ghargáon. Immediate attacks of the Asamese followed. In Ghargáon also coarse red

* Mr Foster writes from Názirab—There are numerous large iron guns in the neighbourhood. One seven miles from here is 18' 6" long, 6½" bore, and has 4 trunnions. There are three 14' guns within a quarter mile of my bungalow. They will be lost in the River Dík'ho next wet season, being only some 15 feet from the bank which is rapidly cutting away. I think they must have been left by the Mughal army, when it retreated in 1663.

rice, without salt, and limes were the only things that could be had, and fever and dysentery soon raged as bad as in Mat'hurápúr. Muhammad Múmin of Tabriz, the Wáq'ahnawis, died.

A bridge which the Imperialists had made over the Dík'ho, was torn away by the current, but was at last built again.

XIV.

A change for the better.

The rains ceased about the middle of Qafar [end of September, 1662]. Makrdhaj, Rájah of Durang, had died in Mat'hurápúr, and his mother who held the reigns of the government during his absence, favoured the Imperialists, and placed men at the disposal of the Faujdár of Gawahattí. Communications now became easier. On the 21st Rabí I. [24th October, 1662], the first supplies arrived by land, and on the 28th, the ships with the provisions landed at Ghargáon.

The Asamese gradually withdrew, and the Rájah went to Solágóri, and then back to Námurp. Bijdili and Karkumbá, the two principal Phukans, were intrenched on the Dilli River, and Bijdili sent again an ambassador expressing his willingness to conclude peace, should the Imperialists withdraw from the country. But his offers were not listened to.

About this time orders came from court in which Iltishám Khán was appointed Governor of Asám and Rashid Khán Faujdár of Kámurp. The latter refused on account of the unhealthiness of the climate, and Iltishám Khán also begged to be excused.

On the 8th Rabí II. [10th November, 1662], Abul Hasan was ordered to take back the provision ships to Taramhání, and then to take the entrenchments of Bijdili in the rear. Qarawal Khán was to accompany him.

XV.

The Nawáb takes the offensive. Pursuit of the Rájah.

Abul Hasan succeeds in destroying some entrenchments held by the Asamese, and set out for Bijdili's trenches, whilst the Nawáb, too, marches towards the Dihing to support him. But Bijdili withdrew. The Nawáb reaches the Dihing. Has a fainting fit. Badlí Phúkan pays his respects with his three brothers. The defection of the Phukans alarmed the Rájah, and as he had been dissatisfied with Bijdili's operations, he killed him and his whole family, males and females. Numerous letters also arrived from the Rájah and the Phukans, but the Nawab paid no attention to them.

Badlí Phúkan submits a plan how to hunt down the Rájah, and with the Nawáb's permission collects between three and four thousand fighting men, and is appointed Qúbahdár of the country between Ghargáon and Námurp.

Numerous requests to conclude peace arrive from the Rájah, but the Nawáb pays no attention to them. An unwelcome news also reaches the camp, that in consequence of the famine in Bengal no rice had been sent, and Ibn i Husain had put his sailors on short rations. The Nawáb sent off 12000 maunds of *shálí* to Lak'húgar.

At Badlí Phúkán's advice, the Nawáb, on the 1st Jumáda I. [1st December, 1662], sent a detachment under Darwish Beg to Solágóri, where several Phúkás and a number of elephants were reported to be. Badlí Phúkán accompanies Darwish, and they reach Solágóri on the 6th. The Nawáb himself crosses the Dihing on the 7th [7th December]. On the 9th, he has an attack of fever and severe pain in the chest. Hakím Karimá of Gilán attends him. But though sick, he determined to follow the Rájah to Námrúp. But many of his officers and the men showed signs of dissatisfaction, and it was reported to the Nawáb that large numbers would march away, if he did not return, as the men would not pass another rainy season in Ásám, much less in Námrúp. The Nawáb got so annoyed, that his illness became worse; but on the 14th [14th December], he broke up, and marched one stage further on to Batám.* On account of his sickness he travelled by pákí. Batám belongs to Ásám, and the zamíndar holds the title of Rájah. It lies on the outskirt of the Námrúp jungles.

The Rájah in the meantime renews his applications for peace, and asks Dilír Khán to intercede on his behalf with the Nawab.

XVI.

Conclusion of Peace. Return of the Army to Bengal.

Illness forced the Nawáb to listen to the proposals of peace. Bhor Mall was again employed to confer with the Phúkás, and the following conditions were agreed upon—

1. The Rájahs of Ásám and Batám should each send one of their daughters to the imperial harem.
2. Each should pay 20,000 *tolahs* of gold, and 120,000 *tolahs* of silver.
3. Fifteen elephants to be sent to the Emperor; fifteen to the Nawáb, and five to Dilír Khán.
4. Within the next twelve months 3 laes *tolahs* of silver and 90 elephants to be sent as tribute to Bengal, in three four-monthly instalments.
5. Twenty elephants to be furnished annually.
6. The sons of Búdh Gosáin, Karkas-há, Bar Gosáin, Prabátar, the four principal Phúkás of the Rájah, to remain as hostages with the Nawáb, till the fulfilment of the conditions in para. 4.

* Or Patám. I have not identified this place; in fact there are no maps available. *Vide* p. 85, third note.

7. The following districts to be ceded to his Majesty the Emperor—

A. In the Uttarkol.

(a.) Sirkár Durang, bounded by Gawáhattí on one side, and by the Áli Burári,* which passes Fort Chamdharah, on the other side.

B. In the Dak'hinkol.

(a.) The district of Nakiráni (نكى راني).†

(b.) The Nágá Hills.

(c.) Beltali (بيل تلي)

(d.) Dúmuriah (دومرية).

8. All inhabitants of Kámrúp kept as prisoners by the Rájah in the hills and in Námurúp to be restored; so also the family of Badlí Phukan.

The districts of the Dak'hinkol that were ceded, have at no previous time formed part of his Majesty's empire. Nakiráni [Deshráni] lies near the Gáro Hills. The Gáros are a wild tribe excessively fond of dog's flesh.‡ If a dog sees a Gáro, it will instinctively howl and run away. Their hills are also near Karíbári, which belongs to the empire.

Dúmuriah extends as far as the Kulang River, which flows at the foot of Fort Kajli. Hence as the Áli Burari forms the boundary between the empire and Ásám in the Uttarkol, so does the Kulang form the boundary in the Dak'hinkol.

Durang is a country full of wild elephants and k'hedahs for catching them. Once Jaidhaj captured no less than one hundred and twenty elephants. In the territory of the Rájah of Dúmuriah elephants were formerly found. It borders on Kachhár, from which the elephants used to come into Dúmuriah; but the Kachhár Rájah having put a stop to the migrations of the elephants, no k'hedahs are now-a-days found in the Dúmuriah.

The above conditions of peace were accepted, and the treaty was mutually signed. After some delay caused by an attempt at cheating in the hostages, the Rájah sent, on the 5th Jumáda II., [4th January, 1663] his daughter, the gold and silver, ten elephants, and the hostages to the Nawáb, and promised to send thirty elephants more to Lak'hágar. The gold and silver was put into the treasury, the hostages were given to Dilir Khan to take charge of, and the

* Called on the map Bhor-allí, or Bhoreli. It flows near Tezpúr and the Kaniakhya Temple, Central Ásám.

† *Vide* p. 76, last note. It seems to be the same as Deshráni, because Deshráni, Desh Dúmuriah, and Desh Beltalah are mentioned together. They belong to Thánah Gawáhattí, and lie south of it. *Vide* also Robinson's *Asam*, p. 289.

By "Nágá Hills" the Mikir and Rengmah Nágá hills appear to be meant.

‡ Most of the wild Asamese tribes eat dogs. The custom is to hang up the dog and force large quantities of boiled rice down its throat. When it is swollen up, it is suspended over a fire and slowly roasted. The rice is said to be "delicious."

Rājah's daughter was provided a place in the Nawāb's harem. On the 9th Jumāda II., eleven elephants were brought in.

The order to return to Bengal was given on the 10th Jumāda II., [9th January, 1663], to the intense joy of all. The Nawāb had still to travel in palkī; he did not march over Gharḡāon, but went straight to Taramhānī, where the prisoners, whom the Rājah had detained in Nāmṛūp, and Badlī Phūkan's family arrived.

XVII.

Arrival at Lak'hūgar. Distress during the retreat. March over Baritalah to Khizrpūr. Death of the Nawāb.

On the 26th Jumāda II., [25th January, 1663] the Nawāb left Dewalgāon for Lak'hūgar. His health daily improved. Mīr Murtazā brought all stores from Gharḡāon, and twenty-five elephants arrived which the Rājah had sent. Many people, males and females, followed the army, happy to find thus a means of leaving Āsām.

The Nawāb had resolved to go to Gawāhāṭṭī, settle financial matters, and then to march against Koch Bihār. He, therefore, embarked with the hostages at Lak'hūgar, sending the principal part of the army *viâ* the Dak'hinkol to Baritalah where they should cross the Brahmaputra. On the 1st Rajab [29th January], he left Lak'hūgar, inspected on his road portions of Dūmuriāh, now annexed, and passed in palkī over the Kajlī plain, where never before an army had passed. On the first and the second days, he travelled eight *kos* daily; on the third, fourteen; on the fourth, twelve. He then passed the Kulang river and then Fort Kajlī. *During these four days, the men lived on water and the animals on grass.* At Kajlī, the Nawāb rested a few days. The mother and the son of Makr Dhaj, Rājah of Durang, who had lately died, waited on the Nawāb. The Rājah of Dūmuriāh was also expected. But his brother's son only came, and, soon after, the Rājah's mother.

Here the Nawāb had a relapse, which ended in asthma, and the hasty way in which he proceeded from remedy to remedy, made him only worse.

In the evening of 11th, [7th February, 1663] the same day on which the mother of the Rājah of Dūmuriāh had come, tremendous lightning and thunder frightened the army, and immediately afterwards, a strong earthquake was felt which shook all, whether they were sitting or standing, reclining or sleeping. The shocks continued for half an hour.

On the 13th [9th February], the Nawāb left Kajlī, and arrived at Pándú, which lies opposite to Gawāhāṭṭī. Muhammad Beg, Faujdār of Gawāhāṭṭī reported the capture of eighty-four Durang elephants in the k'hedahs. The Nawāb recommended to him the mother and the son of the late

Rájah of Durang, and the mother of the Rájah of Dúmuriah, and dismissed them to their homes. Badli Phúkan was to have a Parganah in Bengal, with a revenue of 3000 Rs. On the 14th, Dilir Khán arrived from Lak'húgar, bringing eight more elephants with him.

Rashid Khán, who had formerly declined the office of Faujdár of Kámrup, received from his Majesty a reprimand. He now accepted the office, and was appointed to it by the Nawáb. Muhammad Beg, the former Faujdár of Gawáhatí, who was a servant of the Nawáb, was appointed Thánahdár of Kajlí, under Rashid Khán.

The Nawáb, though very ill, settled several financial matters of great importance, and left Gawáhatí on the 26th Rajab [22nd February, 1663]. On the last of the month, he reached Baritalah, where the Koch Bihár detachment joined him. Here the Nawáb's condition got much worse, the fainting fits came on oftener, and Hakím Zahirá Ardistaní was sent for from Húglí, and Mirzá Muhammad from Akbarnagar.

Description of the diagnosis of each doctor. The men commonly believed that the sickness was the result of witchcraft practised by the Rájah of Ásám. The doctors recommended the Nawáb to go to Khizrpúr. On the 26th Sha'bán, he appoints 'Askar Khán to renew operations against Koch Bihár.

The Nawáb died on board the barge on Wednesday, the 2nd Ramazán, 1073 [30th March, 1663], half an hour before sunset, two *kos* above Khizrpúr.* The *tárikh* of his death is *مستند آرای بهشت*, or 'occupant of paradise,' A. H. 1073. Dilir Khán and Ihtisham Khán buried the body the next day at Khizrpúr, in a vault which the Nawáb had given orders to build after leaving for Ásám. According to his last wish, his body was to be taken to Najaf, and buried in holy ground. News of his death was at once sent to court and to his son Muhammad Amín Khán.

* Neither Rennel's Map of the 'Environs of Dacca' in 1778 (Map xii, of the Bengal Atlas), nor the Survey Maps help us to identify Khizrpúr, and I addressed Dr. James Wise, of Dháká, who is so well known for his researches in the local history of the District, regarding the geographical position of the place. He kindly sent me the following reply—

"Naráinganj, eight miles S. E. of Dacca, is in a parganah called Khizrpúr. It is bounded by the Dacca river, the Burha Ganga. This situation corresponds with that of the historical Khizrpúr, which was on the banks of the Ganges. A tomb, said to be that of one of Sháistah Khán's daughters, is called by the Muhammadans of the present day the 'Khizrpúr Maqbarah.' It is strange that the tomb of such a great man as Mir Jumlah should not exist."

The *Madáir ul Umará* does not record whether the body was taken to Najaf (Mashhad, in Khurásán). It is said that many towns in Taliugánah contain buildings erected by the Nawáb, and in Haidarábád there is a tank, a villa, and a palace, still bearing his name.

Events after 1663.

With the death of the Nawāb the *Fathiyah* i' *'Ibriyah* ends. The news of his death reached Aurangzib at Lāhor, and, according to Bernier, (*vide* above p. 35) was a source of joy for the emperor. The *'Alamgīrnāmah* says that he was sorry, because Mir Jumlah had been an old servant.

Whether the "ceded" districts of Central Asām were ever taken actual possession of by the Imperialists, is a matter of doubt. The *Asām Būranjī*, or *Asām Chronicle*, according to Robinson (*loc. cit.*, p. 166), gives a very different version, and says "that Mir Jumlah's army was entirely defeated, and he was obliged to give up the whole of zillah Kāmrup to the Asamese, which was from that time placed under the management of a great Asamese officer, the Bar Phūkān, and formed a government equal to about a third part of the whole kingdom. Jaidhaj Singh died A. D. 1663."

From the following extract from the *'Alamgīrnāmah* it would certainly appear that Gawāhatī was the actual frontier of the Mughul empire and Asām, when Mir Jumlah returned to Bengal, and that the cession of Durang as far as Tezpur was nominal; but on the other side it is quite clear that Mir Jumlah's retreat was not an absolute defeat. The payments of the money are certainly nowhere recorded by Muhammadan historians; but a part of the elephants did come, and a daughter of the king of Asām was subsequently married to an Imperial Prince.

Gawāhatī then was the actual frontier at Mir Jumlah's retreat, and remained so for four years, till the beginning of 1078 A. H., or the very end of A. D. 1667. The re-conquest by the Asamese is the last event recorded in the *'Alamgīrnāmah* (Bibl. Ind. Edit., p. 1068) as follows—

"At this time [Rajab, 1078, or December, 1667], reports were received by his Majesty from Bengal that the Asamese with a numerous army and a large fleet had attacked Gawāhatī, *which is the frontier of Bengal*. The Thānahdar, Sayyid Firūz Khān, could not in time receive assistance. He and most of his men bravely defended themselves, and sacrificed their lives on the path of loyalty (*'ubūdiyyat*). His Majesty resolved to punish the Asamese, and appointed Rājah Rām Singh to the command of an imperial corps, which was to be strengthened by troops of the Bengal army. Rājah Rām Singh, on the 21st Rajab 1078, A. H., [27th December, 1667] received as *khalfat* a horse with a gilded saddle and a dagger with a belt adorned with pearls, and was sent to Asām. Naqirī Khān,* Kisarī Singh Bhūrtiāh,† Rag'hunāth Singh of Mirthah, Bairam Deo Sisaudīah, and other Maṇṇabādārs, with 1500 Ahadīs and 500 artillery, accompanied him."

* The *Maāsir* i' *'Alamgīrī* (Ed. Bibl. Indica, p. 65) has *Nuqrat Khān*.

† The *Maāsir* i' *'Alamgīrī* has *Kīrat Singh Bhūrtiāh*, which is clearly the correct reading.

For the subsequent events we have only the *Maāsir i 'Ālamgīrī* to refer to, whose scanty notes are nevertheless of great value. I translate from the edition of this work in the Bibliotheca Indica.

Page 73. "On the first of Zī Hajjah, 1078 [2nd May, 1668], Rahmat Bānū, the daughter of the king of Āsām was married to Prince Muhammad Ā'zam. Dowry, 180,000 Rupees."

It is not said whether this is the same girl that was taken by Mīr Jumlah to Bengal. Her name implies that she had been converted to Islām. It was only Akbar and Jahāngīr that did not convert their Hindū princesses.

Page 97. "Rājah Rām Singh, who was a commander of 4000, 4000 *duaspah sihaspah* troopers, was promoted to a command of 5000, and his son*

* This Kīshn Singh is called grandson (*nabīrah*) of Rām Singh on p. 172 of the *Maāsir*. It should be son. Rām Singh was the son of Jai Singh I, of Ambar (Jaipūr), with whose assistance Aurangzib had come to the throne. He died at Burhānpūr on the 28th Muharram 1076, or 10th July, 1667. The '*Ālamgīr-nāmah*' (p. 1051) and the *Maāsir i 'Ālamgīrī* (p. 62) state that he died a natural death, and that his son Rām Singh was immediately made Rājah. Colonel Brooke (*Political History of Jeypore*, p. 11) says, though he does not mention his authority, that Jai Singh was killed by his son Kīrat Singh, whom Aurangzib had promised the succession, and that the Emperor had engaged his services, because he thought Jai Singh too powerful a subject. "The feeling of the country, however, was too strong against the parricide, to allow such a succession to be carried out, and Kīrat Singh was obliged to content himself with Kāmāh, now in the Bhurtpore territory, and which his descendants enjoy to this day; but the parricidal act of their ancestor has for ever excluded them from any chance of succeeding to the Jeypore throne." Kīrat Singh certainly was at Burhānpūr, when Jai Singh died. He had in nearly every war served under his father, as, for instance, in the Mew disturbances, after which he received Kāmāh Pahlāwī, and Koh-Mujāhid, and was appointed Faujdār of Mewāt. Shāhjahān, two years before being disposed, had made him a commander of 1000, and after the wars with Sīwā, Aurangzib gave him a command of 2500. After the death of his father, he was made a commander of 3000, a promotion which does not look like a reward for the great crime imputed to him. Kīrat continued to serve in the Dak'hin, and died in the beginning of 1081 (1673, A. D.).

Jai Singh was succeeded by his first-born son, Rām Singh. He had risen under Shāhjahān to the rank of commander of 3000. In the battle of Samogar, he was with Dārā Shikoh, but joined soon afterwards, like his father, the party of Aurangzib. He served under Muhammad Sultān, in the pursuit of Shujā', and took a part in the capture of Sulaimān Shikoh at Srīnagar. Subsequently, he served under his father against Sīwā; and when the Bhonsla and his son Sāmbā presented themselves at Court, Aurangzib warned Rām Singh to have a sharp eye on them, and not to let them escape. But they fled (beginning of 1077), and Rām Singh fell into temporary disgrace, and lost his rank. The fact that Jai Singh died soon afterwards may be construed into a suspicion against Kīrat Singh. But Rām Singh was immediately restored, received the title of Rājah, and a manṣab of 4000. In the same year (1078), he was ordered to Gawāhatī in Āsām. Rām Singh remained in Āsām till the middle of 1086 (1675), his long stay being evidently a punishment. He died soon after. His son

Kishn Singh received a present of a *sarpesh* studded with jewels." End of 1080 A. H., or beginning of A. D. 1670.

Page 154. "On the 22nd Rabī' II., 1087, [24th June, 1676] Rājah Rām Singh returned from Āsām, and paid his respects at court."

Page 173. "On the 29th Muharram, 1090, [1st March, 1679] Shahrukh, a servant of Prince Muhammad 'Azam brought a report to court which contained the account of the conquest of Gawāhāṭṭi by his Majesty's troops. The messenger received a reward of Rs. 1000; and a necklace of 91 pearls, valued at 2 laes of Rupees, and a tassel (*turrah*) studded with jewels, of a value of 25,000 Rupees, were sent to the Prince as presents."

Page 234. Rashid Khān reported that, according to orders, the Amīr-ul-Umarā had been charged with 52 laes of Rupees on account of expenses incurred in Gawāhāṭṭi. The officer referred to had written to say that the whole expenditure amounted to 7 laes of Rupees * * * Hence this sum was ordered to be charged."

Page 387. Prince Muhammad 'Azīm ['Azīm ushshān, son of Bahādūr Shāh] was appointed Ġubahdār of Bengal and Faujdār of Koch Bihār." End of 1108, A. H., or middle of 1697, A. D.

This closes my collection of notes on Koch Bihār and Āsām from Muhammadan historians of the 16th and 17th centuries. I have only occasionally referred to *Khajī Khān* (Ed. Bibl. Indica, II, pp. 130 ff.). He has used the 'Alamgir-nāmah, in his slovenly way, without the slightest exactness even in his meagre geographical and chronological details. To give an example. He makes the Koch Bihār Rājah flee to an old zamīndār of the country, near whose castle there is a river, over which two chains pass. The chains are fastened to pegs and stems of trees on the opposite banks, and people use the chains as a bridge. Comparing this with the account on p. 68, we see that Khān has a wonderful power of combination, whilst the castle is altogether fictitious. He gives Koch Bihār five chaklahs or eighty-nine parganahs, and fixes the revenue at 10 laes of Narāini rupees. The *kaserā* root (*Cyperus tuberosus*, Wild) is mentioned as the best remedy for wounds caused by poisoned arrows. He speaks of the breaking of idols in Koch Bihār, and makes the Nawāb build mosques in Simlahgar and Ghargāon, and remit one year's taxes. The circulation of Narāini rupees in Āsām was forbidden, because the Nawāb coined money with Aurangzib's name on it. A great deal of silver and gold is found with the assistance of expert treasure-finders, and ten or twelve golden keys and a map of Āsām are sent to court. He traces the epidemic to bad water; "for the rain

Kunwar Kishn Singh died when young, of a wound he had received. He had served for some time in Kābul. Vide my essay, entitled 'A Chapter from Muhammadan History,' *Calcutta Review*, 1870.

falls on many poisonous trees, and when such water runs into rivers or tanks, it renders them poisonous. Again, the wind blows the flowers of poisonous trees into the rivers, and thus makes the water unwholesome. Thus between Khandesh and Súrat, four stages from the latter, there is a river called Sápín, the water of which at the end of the rains is quite poisonous.”*

Robinson (Ásám, p. 156) has some notes on Baldeo, or Balit Naráin, as he calls him, and places his death in A. D. 1634. This is certainly too early as his defeat by the Mughuls (*vide* above p. 62) took place in 1637. He does not mention Baldeo's son, Chandr Naráin, but a grandson of the same name, who in 1671 was succeeded by Surja Naráin. He then says that about 1682 the territory of Surja Naráin [Durang and Kámrúp] “were invaded by Munjur Khán, a general of the emperor of Dillí, when he himself was taken prisoner, and conveyed to the presence of the emperor. Some time after, effecting his escape, he returned to his own dominions; but from a sense of shame, is said to have refused resuming the reins of government.” His brother Indra Naráin lost portions of his kingdom to the Ahom kings, and only retained Durang.

I do not know who this “Munjur Khán” can be. The spelling suggests Manzúr Khán (منظورخان), a doubtful name, or Mançúr Kkán (منصورخان). The year 1682 refers to A. H. 1094; but I can find nothing regarding this invasion in Muhammadan historians.

APPENDIX.

Col. J. C. Haughton, C. S. I., Koch Bihár, kindly sent me the following extract from Biswessar's History of Ásám, which may advantageously be compared with the extracts from the Akbarnámah, on pp. 52, 53, 56.

“Rájah Nara Naráin,† having no male issue, determined to appoint his nephew Rag'húdeb successor. When old, however, he had a son, and Rag'húdeb became hopeless. The latter therefore, quitted one day the palace under the pretext of going a hunting; but the Rájah, in order to console him, allotted to him a portion of the *ráj*.‡

“Nara Naráin died after a reign of fifty-six years, and was succeeded by his son Lachmí Naráin.

* The text of Kháfí Khán's history in the Bibl. Indica Edition is very untrustworthy as regards proper nouns. On p. 138, of vol. II., read *Qází Samái*, for *Qází Tládr*; p. 142, *Gawáhotl* for *Kothl*; p. 144, *Sámahgarh* for *Bhángar*; p. 161, *Gajpúr* for *Kachhpúr*; p. 163, *Subhán Singh* for *Saján Singh*.

† The ‘Bálgosáin’ of the Akbarnámah. Rag'húdeb is the ‘Pát Kunwar.’

‡ This seems to have caused the division of Koch Bihár and Koch Ilájo. Lachmí was thus the first Rájah of Koch Bihár only.

"Rag'húdeb having obtained a portion of his uncle's kingdom, founded the town of Ghelabijaya in Kámrúp, and erected a temple at Hájo in 1583. He died in 1593, and was succeeded by Parielhat Naráin, who made war on his uncle Lachmi Naráin. Parielhat went to Delhi, and died at Patna on his way home from Agra in 1606.* *Subsequently*, the Muhammadan ruler invaded the kingdom to realize the promised tribute. The Mantri succeeded in obtaining the office of *Qánúngo*.

"At this time the kingdom was divided into four sirkárs. Balit Naráin, brother of Parielhat, got the Sirkár, east of Dikrai and west of the river Manah. Parielhat's son, Bijat Naráin, only got the land between the Manah and Sankos. The descendants of Bijat Naráin are known as the Rájahs of Bijni."

The following extract from the family history of the Rájahs of Bijni, I also owe to Col. Haughton's kindness.

"Mahárájah Biswa Singh had two sons. The elder, Nara Naráin Bhúp reigned over that portion of the kingdom which lies between Karatuja and Bihar. The younger, Shukladháj Bhúp ruled over the country from Bihar to Dikrai. For his impetuosity at time of war, he was called Chilah Rai, 'King Kite.' His son was Rag'húdeb Naráin. The latter had three sons; one was king of Durang, another ruler over Beltalah, and the eldest, Parielhat Naráin was Rájah of Bijni. Parielhat waged war with Lachmi Naráin; but sorry for having attacked his nearest relation, he turned hermit. He went also to Dihli with his Diwan, astonished the emperor by his extraordinary talents, received a *kha'at*, and was sent back to his country with a royal guard. But he died at Rájmahall on his way home. The Diwán went back to Dihli, and was made *Qánúngo* of Koch Bihar. Parielhat left a son Chandr Naráin, who enjoyed his father's *ráj*, but did nothing remarkable." [*Vide* pp. 58 to 60, and Robinson, p. 155.]

* This date is too early.

*Notes on Arabic and Persian Inscriptions, No. II.—By H. BLOCHMANN,
M. A., Calcutta Madrasah.*

Since the publication, in last year's Journal, of several Arabic and Persian Inscriptions forwarded to the Society during 1871, a few others have been received from Messrs. Wilson, C. S., Badáon; E. Vesey Westmacott, C. S., Dinájpúr; and Dr. J. Wise, Dháká. As these inscriptions are of great interest, I have placed them together, and added a few notes and extracts from the letters which accompanied the rubbings.

They refer to

Dinájpúr, (Gangarámpúr).

Dháká.

Dhámrái, N. of Dháká.

Badáon,

and A'lápúr, East of Badáon.

Gangara'impur, Di'na'jpu'r.

The following four inscriptions were received from Mr. Westmacott C. S., Dinájpúr. They are by no means new, having been mentioned by Buchanan in his 'Historical Description of Dinájpúr' (p. 51), and partly by Mr. Thomas in his 'Chronicles of the Pathan Kings' (p. 149); but they are here for the first time given with the text and correct translations. Buchanan says that the chief place in Division Gangarāmpūr is Dandamah, the old Dev Kot.* "It received its present appellation (which signifies a place of war) from its having been a military station during the early Muhammadan government, as it probably was then on the frontier. * * * The chief officer, under the title of Wazir, seems to have resided on the banks of a very noble tank, which is named Dahal Dig'hí, and has evidently been formed by the Muhammadans: its water being about 1000 feet from east to west, and 1000 from north to south * * * On many different parts, especially towards the north east corner, are heaps of bricks, probably the ruins of the houses that were occupied by the Muhammadan officers. On the centre of the north side is the Dargáh of a saint, named Mullá 'Atáuddín, contiguous to which is a small mosque. Both are very ruinous, but a canopy is still suspended over the tomb, which is much frequented as a place of worship, and the faqir has an endowment of 200 big'hahs (about 100 acres) of land."

Buchanan then mentions five inscriptions belonging to the tomb and the mosque.

* Mentioned several times in the *Tabaqát i Náqir* and in Dowson's edition of Elliot's *Historians*, II, pp. 313, 314, ff.

First.—One over the gate of the mosque, “by Wazir Shair Musaur of “Mozofurabad, commander of the troops of Firuzabad, in the reign of “Hoseyn Shah, Sultan of Hostina, son of Mozofur Shah, A. H. 718.” His date and names are wrong; *vide* p. 106, inscription III.

Secondly.—One under the former, stating that the Gumbuz [vault] of the tomb had been erected “by Sekandar Shah, son of Majahud Shah, son of Ayas Shah, A. H. 765.” These readings will be found corrected below; *vide* inscription II, p. 104.

Thirdly.—One in the wing of the mosque, mentioning “Futeh Shah, son of Mahmud Shah, A. H. 845.” I have not seen this inscription; but the year is wrong. Mr. Westmacott says that the wall on which the inscription was, has fallen down.

Fourthly.—An inscription stating that “a part of the mosque, called “Hamada [?] was built in the reign of Ky Kaos Shah, by order of Sakandar “Sani, or the 2nd, A. H. 872.” This is the famous Kai Kaús inscription, No. I, below.

Fifthly.—An inscription “over the door of an apartment used as a kitchen by faqirs, to the right of the mosque, on which Makhdum Mulla and Muzaffar Shah are mentioned. The date is no longer visible.” *Vide* p. 107, No. IV.

I shall now give the text and translation of the inscriptions from the rubbings which Mr. Westmacott forwarded to the Society.

I. *The Gangarúmpur Kai Káuś Inscription.*

بَنَى هَذِهِ الْعِمَارَةَ الْمَسْجِدَ فِي عَهْدِ السَّاطَانِ (sic) السَّلَاطِينَ وَكُنَ الدُّنْيَا
وَالدِّينَ ظِلُّ اللَّهِ فِي الْأَرْضِينَ كَيْكَاؤُسَ شَاهِ بْنِ مُحَمَّدٍ بْنِ السَّلْطَانِ يَمِينِ خَلِيفَةِ
اللَّهِ نَاصِرِ أَمِيرِ الْمُؤْمِنِينَ خَلَّدَ اللَّهُ مَلِكُهُ وَسُلْطَانُهُ بِفُرْمَانِ خُسْرُو زَمَانِ شَهَابِ
الْحَقِّ وَالدِّينِ سَكَنْدَرِ ثَانِي الْخِ اعْظَمَ هَمَامِيونَ ظَفَرِ خَانِ بَهْرَامِ ائْتَمَكِينَ سُلْطَانِي
خَلَّدَ اللَّهُ مَلِكُهُ وَسُلْطَانُهُ وَمَدَّ اللَّهُ عَمْرَهُ بِتَوَلِيَّتِ صَلَاحِ جِيُونَدِ مَلِكَمَانِي فِي
الْغُرَّةِ مِنَ الْمَكْرَمِ شَهْرِ سَنَةِ سَبْعٍ وَتِسْعِينَ وَسِتِّمِائَةِ ١١

This mosque was built during the reign of the king of kings, Rukn-ud-dunyā waddīn, the shadow of God on earth, Kai Káuś Sháh, son of Mahmúd, son of the Sulṭán, the right hand of the Khalifah of God, the helper of the Commander of the Faithful—may God perpetuate his rule and kingdom!—at the order of the Lord of the age, by Shiháb ul haqq waddīn, a second Alexander, the Ulugh i A'zam Humáyún, Zafar Khán Bahrám Itgín—may God perpetuate his rule and kingdom and

may God prolong his life!—under the supervision (*bata'aliyat*)* of Salāh Jīwand of Multān. On the 1st Muharram, 697, A. H. [19th October, 1297].

As mentioned above, this inscription is quoted by Mr. Thomas in his 'Chronicles of the Pathan Kings,' p. 140, where a "rough" translation by Col. Nassau Lees is given. The 'translation' leaves out the name of the builder, and wrongly puts his titles in apposition to the words *Khusraue zamān*. The absence of a facsimile has led Mr. Thomas to state that Kai Kāūs confessed allegiance to 'Alāuddīn of Dihlī, who is the Sikandar uṣṣānī *par excellence*; but the grammatical construction of the sentence, and the idiom, shew that the words 'Sikandar uṣṣānī, Ulugh i A'zam Humāyūn, and Zafar Khān', are merely titles of Bahrām Itgīn. He must have been a Malik of high rank, as the titles are high; but my Tribeni inscriptions (Journal, 1870) and Mr. Broadley's Bihār inscriptions, (about to be published in this volume) give Maliks not only similar titles, but also the phrase 'May God perpetuate his rule and kingdom,' and even *Julūs* names, if I may say so. 'Shihāb ul Haq waddīn', therefore, is merely the *julūs* name of Malik Zafar Khān, and shews, moreover, that the 'Sikandar uṣṣānī,' cannot be 'Alāuddīn, whose full *julūs* name, with the *kunyah*, was 'Alāuddīn *Abulmuzaḥḥaf* Muhammad Shāh.

Observe also that when names and titles are given, the titles are generally put first and then the name, and the idiom requires that the word *humāyūn* be taken to *Ulugh i A'zam*, not to *Zafar Khān*.

Itgīn is 'Turkish and means 'proprietor.' It also occurs as name; *c. g.*, in the list of the grandees of Balban's Court (*Tārīkh Baranī*, p. 24, last line).

The Arabic style of the inscription is bad, as in all Bengal inscriptions. The words *محمود بن السلطان* are slightly doubtful, the rubbing merely giving *محمود بن السلطان*. I am not satisfied with my reading of the name of the supervisor; 'Jīwand' is unusual; but 'Jīwan,' without the final *d*, is very common.

II. *The Inscription on the Dargāh of the Maulānā 'Atī.*

Buchanan calls him 'Atāuddīn, which is perhaps a mistake for 'Atāullah. The inscription is half poetry, half verse.

درین گنبد که بنیاد عطائیست * عمارت خانۀ کونین بادا
ملایک بر بنایش خوانده تا حشر * بنیاد فوقکم سبعا شدادا
بعنائیت هفت ایوان بدیع گر آئدی خلق سبع السموات طباقا تقدست

* The same phrase occurs in the Arabic inscription on the wall of a Jain Temple near Ajmīr, of A. H. 666; *vide* Journal for 1848, p. 553.

اسماؤه با تمام رسید گزید رفیع که نسخه ایست از تختۀ سقف جلال و لقد
 ربنا سماء الدنيا بمصابيح در روضۀ متبرک قطب الاولیاء وحید المحققین
 سراج الحق و الشرع و الدین مولانا عطا عطاء الله تعالی فضیلتہ فی الدارين
 با الامر (sic) صاحب العهد و الزمان باعث العدل و الاحسان حامی
 البلاد و راعی العباد السلطان العادل العالم الاعظم ظلّ الله فی العالم
 المخصوص بعناية الرحمن ابوالمجاهد سکندر شاه بن الیاس شاه السلطان
 خلد الله ملکه *

بادشاه جهان سکندر شاه * که بنامش در دعا سفتند

نور الله شانه خواندند * خلد الله ملکه گفتند

فی تاریخ سده خمس و ستین و سبعماية * عمل بدو درگاه غیاث زرین دست

[Poetry, metre short *Haraj*]. In this dome, which was founded by 'Atā—may the building be a house for both worlds!—angels sing on account of its erection till the day of judgment, "*Banainā fauqakum sab'an shiddād.*"*

[Prose.] Through the grace of the maker of the wonderful seven palaces, "who has created the seven heavens one above the other"—his names be praised!—the building of this lofty dome was completed. It is a copy of the dais of the vault of glory. And "we have adorned the heaven of the world with lights" in the blessed shrine of the pole of saints, the unequalled among enquirers, the lamp of truth, and law, and faith, Maulānā 'Atā—may God Almighty bestow His grace upon him in both worlds! [The building was completed] by order of the Lord of the age and the period, the causer of justice and liberality, the guardian of countries, the pastor of the people, the just, wise, and great king, the shadow of God on earth, distinguished by the grace of the Merciful, Abul Mujāhid Sikandar Shāh, son of Ilyās Shāh, the king, may God perpetuate his kingdom!

[Poetry, metre *Khufī*]. The king of the world, Sikandar Shāh, for whom people string pearls in prayer, and chant, 'May God illuminate his worth,' and say, 'May God perpetuate his kingdom.'

Dated, A. H. 765 [A. D., 1363]. Done by the slave of the throne, Ghiās, the golden-handed.

The inscription measures about 5 feet by 1½ foot. The characters are beautifully drawn. Ghiās, the 'golden-handed' (*zarrīndast*) was evidently the Court Katib of Sikandar Shah; his title reminds us of the *zarrīn-qalams* and *mishkīn qalams* of later times. Even in point of style, the inscription is one

* A metrical passage from the Qorān, LXXVIII, 12, "We have built over you seven (heavens), firm ones."

of the best among Bengal inscriptions of the 8th century of the Hijrah, that I have seen. The text spells *bādīshāh*, instead of *pādīshāh*; if this be not accidental, we would have here a proof shewing that the Indian pronunciation of this word is of old standing.

III. *Rukn Khān's Mosque.*

بنی هذا المسجد و المنارة خانعظم ركنخان علاءالدین السهرتیی
 شرابدار غیر محلی و یزر شهر مشهور بظفرآباد و سرلشکر و کوتوال بک اعلی
 شهر مشهور فیروزآباد و منصف دیوان کتوب الشهر المذكور فی عهد علاء الدنیا
 و الدین ابوالمظفر حسین شاه سلطان الحسینی پیش در شیخ المشایخ
 شیخ عطاء هرکه این خیر مذکورین را تازه دارد خدای تعالی او را تازه دارد
 و نزدیک شیخ مقبول گردد سغه ثمان عشر و تسعمایه ۱۱

This mosque and the minaret were built by the Khān i 'Azim Rukn Khān, [son of] 'Alāuddīn of Sarhat, cup-bearer out of the palace, Vazīr of the town known as Zafarābād, Commander-in-chief, High Kotwāl of the town known as Fīrūzābād, Muncif of the Dīwān of books in the town mentioned, during the reign of 'Alā'ud dunyā waddīn Abul Muzaffar Husain Shāh, the king, a descendant of the prophet, in front of the door of the Shaikh of Shaikhs, Shaikh 'Aṭā. He who keeps up and renews this pious grant, will be renewed by God, and will find favor with the Shaikh. A. H., 918 [A. D., 1512].

Rukn Khān united many offices in his person; but the titles are not quite clear. I am not quite sure whether I have correctly translated the words *Sharābdār i ghair-mahallī*. One of General Cunningham's Husain Shāhī inscriptions from Sumargāon gives a similar title, '*jāmadār i ghair-mahallī*', 'keeper of the wardrobe outside the palace.'

Rukn is called 'Sarhatī,' perhaps from Sarhat in Birbhūm. In my paper on the Tribenī Inscriptions (Journal, 1870, p. 284), the same man evidently is mentioned; but he is there called "Rukn Khān, son of 'Alāuddīn of Sirhat," and we have no doubt to put here an Izālat after رکن خان, which is used in Persian, when بن is omitted. We are also enabled to fix the date of the Tribenī inscription, which (*loc. cit.*, p. 285) I referred, as I now see erroneously, to the end of the 7th century of the Hijrah.

Fīrūzābād appears to be the same as Panduah, the 'Purroa' of our maps, near Maldah. I am more doubtful about Zafarābād, unless it refers to the same as is mentioned by Badāonī, I, p. 246.

IV. *Muzaffar Sháh's Inscription.*

بني هذه العمارة المسجد في عهد المخدم المشهور قطب اوليا مخدم
مولانا عطا طيب الله ثرا (sic) و جعل الجنة مثواه في عهد شمس الدنيا
و الدين ابو المعين مظفر شاه سلطان خلد الله ملكه و سلطنته في * * *

This mosque was built in the time (*fi 'adul*,?) of the renowned saint, Mauláná 'Atá—may God give him affluence and may He make paradise his dwelling place!—during the reign (*fi 'ahd*) of Shamsuddunyá waddín Abul Mu'in Muzaffar Sháh, the king, may God perpetuate his rule and kingdom! In the year (not legible).*

The first *fi 'ahd* is unintelligible to me, as 'Atá lived before Sikandar Sháh. The inscription, though the year is unclear, is of some value, as it gives the full name of Muzaffar Sháh.

Dha'ka'.

The following inscriptions were received from Dr. James Wise, of Dháká, together with copious notes.

The Inscription on Khwájah Jahán's Mosque.

Dr. Wise says—

"The mosque from which this inscription is taken is a very insignificant building in a Mahallah of Dháká, called 'Chúrlaṭṭab.' The building looks old, and curious to say, the three doors of entrance are not arched, but square. They are little over five feet in height; hence it is probable that the ground outside has been raised. Its history is unknown. The only name by which it is known, is the 'Masjid of Bholá Khán,' a former *Khádím*. The slab has evidently been removed from some older mosque and city to Dháká. It is a curious thing that General Cunningham and I found no inscription at Sunnargáo earlier than A. H. 888."

I have not been able to decipher the whole inscription, a few words before the date being illegible.

قال الله تعالى و ان المساجد لله فلا تدعوا مع الله احدا استحكم
هذا الباب في أيام خلافة أخليفة المستعان ناصر الدنيا و الدين ابو المظفر
محمود شاه السلطان خلد ملكه الخان المخاطب بخطاب خواجه جهان
حماء عن آفات الرحمن في الايام * * * * الله الى يوم التذكار * * * كان

* The date was already at Buchanan's time illegible. It looks as if it was 'Rajab, 902.'

فِي عَشْرِينَ مِنْ شَعْبَانَ سَنَةِ ثَلَاثٍ وَسِتِّينَ وَثَمَانِمِائِهِ مِنْ هِجْرَةِ نَبِيِّ
صَلَّى اللَّهُ عَلَيْهِ وَآلِهِ أَجْمَعِينَ ۥ

God says, 'Surely the mosques belong to God. Worship no one else besides God [Qorán, LXXII, 18].

This entrance was firmly erected* during the days of the reign of the Khalifah of God, Nāqiruddunyá waddín Abul Muzaḥḥar Mahmúd Sháh, the king, by the Khán whose title is Khwájah Jahán—may the Merciful protect him from all misfortunes on earth, * * * to the day of resurrection! Dated, 20th Sha'bán, 863, [13th June, 1459, A. D.] of the era of the Prophet,—may God bless him and all his family!

This inscription is, I believe, the first of Mahmúd Sháh that has been published. It is, therefore, of particular value. The year 863 is remarkable, and it looks as if during the long reign of Nāqir Sháh, or Husain Sháh I., as he ought to be called, Mahmúd Sháh had reigned as opposition king. Mahmúd's reign must have been of precarious tenure, as he was opposed by his son Bárbak Sháh, whom my *Tribeni* inscriptions mention as reigning king in 860.

Dr. Wise's inscription give Mahmúd's full name *Nāqiruddin Abul Muzaḥḥar Mahmúd Sháh*. This may explain the fact that Bengal Histories call Bárbak Sháh 'the son of Nāqir Sháh'; for confusions of names and *julús* names are common in Bengal History; *vide* Journal, 1870, p. 296.

It may be that the Khán Khwajah Jahán mentioned in this inscription, is the same as the Khán Jahán, whose tomb is at Bagerhat.† A description of his tomb was given by Babú Gaur Dás Baisak, in the Journal of this Society, for 1867, pp. 130, 131. On p. 135, *loc. cit.*, the Babú gives the inscriptions‡ attached to the tomb, from which it appears that Khán Jahán died in the end of Zil Hajjah, 863 [end of October, 1459, A. D.]—the same year, which is mentioned in the above inscription. The Bāgherhāt inscriptions mention, unfortunately, no king.

* The writer uses *استحكم* as a transitive verb, for which construction there seems to be no authority.

† Babú Gaur Dás Baisak derives the name of Bāgherhāt (باغیرهاٹ) from the Persian باغ, and explains *Bāgher-hāt* by 'garden fair.' I cannot say whether this is correct; Muhammadans pronounce باقرهاٹ, *Bāqir-hāt*, from some Muhammadan of the name of *Bāqir*.

‡ The Arabic inscription (A.) given by the Babú contains several misprints. His inscription B. is a curious specimen in point of metre, as it is eight times مستفعلن although the Rajaz i musamman i salim (*vide* my *Prosody of the Persian*, p. 34) is not used in Persian.

Dha'mra'i, North of Dha'ka'.*Two Inscriptions of the reigns of Jaláluddín Fath Sháh and Husáin Sháh.*

. Dr. Wise says—

"Dhámraí is situated about twenty miles north of Dháká, at the junction of Kaklajuni and Bunsí rivers. It was one of the places where the Afgháns were settled after the defeats in Orissá and Lower Bengal, towards the end of Akbar's reign. There were two other places still further north on the Bunsí, where they were granted free lands. One, Ganakpára, stands on the left bank of the river. There are no descendants of the Pat'háns there now, nor are there old Masjids or ruins. The third settlement was Ghosí in pergunnah 'Atíah, zil'ah Maimansingh. It is about ten miles due north of Dhámraí.

"Dhámraí is a scattered village, each portion being placed on a mound, generally of red laterite. One of its Mahallahs is still called 'Pat'hántalah,' and a few of the residents still claim to be of Afghan blood; but the peculiar physiognomy of that race is not to be found now-a-days. There are no old Masjids in Dhamrai. One did exist till lately; but it became ruinous, and the proprietors have dug up the foundations and sold the bricks. The only buildings of interest are the tombs of five brothers, all *piás*, or saints. The most striking one is that of Mír Sayyid 'Alí in Pat'hántalah. It is eight feet high, and is surrounded by a high wall. On the west side of the tomb is an inscription in fine preservation, which bears the name of Sultán Husáin Sháh (*vide* below). The tombs of the other Pírs are of no interest. The other inscription was found by me in a private house in Pat'hántalah. It belongs to Fath Sháh's reign. Both inscriptions are evidently plundered from Sumárgáon or some other city. There is no inscription in Mu'az-zamúr."

I.

قال الله تعالى اذا ما يعمر مساجد الله من آمن بالله و اليوم الآخر
قال النبي صلى الله عليه وسلم من بنى مسجدا لله بنى الله له بيتا في
الجنة بنى هذا المسجد في زمن سلطان العهد و الزمان المؤيد بتأييد الرحمن
غوث الاسلام و المسلمين السلطان ابن السلطان جلال الدنيا و الدين ابوالمظفر
فتحشاه سلطان بن محمود شاه السلطان خلد الله ملكه و عطائه و اعلى
امره و شانه بنى هذا المسجد المبارك للاسلام و المسلمين ظهير الملّة و
الدين ملك الملك آخوند شير مير بحر اسكنه الله تعالى في الجنة
العاشر من جماد الاول سنة سبع و ثمانين و ثمانمائة ١١

God Almighty says, 'Surely he who believes in God and a future life, will build mosques for God' (Qurán, IX, 18). The prophet—may God's blessing rest on him!—says, 'He who builds a mosque for God, will have a house built for him by God in Paradise.'

This mosque was built in the time of the king of the age and the period, who is aided by the aid of the Merciful, the helper of Islám and the Muslims, the king, son of the king, Jaláluddunyá waddín Abul Muzaffar Fath Sháh, the king, son of Mahmúd Sháh, the king,—May God perpetuate his rule and kingdom, and elevate his power and dignity!

The builder of this mosque which is blessed to Islám and the Muslims, is Zahir-umillau waddín, Malikul Mulk Akhúnd Sher, the admiral—May God Almighty give him a dwelling in Paradise! Dated 10th Jumáda I., 887 [27th June 1482, A. D.]

II.

قال النبى صلى الله عليه وسلم من بنى مسجدا لله بنى الله له
بيتا مثله فى الجنة بنى هذا المسجد الجامع السلطان المعظم المكرم
علاء الدنيا والدين ابوالمظفر حسين شاه السلطان بن سيد اشرف الحسيني
خلد الله ملكه و سلطانه فى سنة اثنى عشرين و تسعمائة //

The Prophet—may God's blessing rest on him!—says, 'He who builds a mosque for God, will have a house like it built for him by God in Paradise.' This Jami' Masjid was built by the great and respected king 'Aláuddunyá waddín Abul Muzaffar Husain Sháh, the king, son of Sayyid Ashraf, a descendant of Husain,—may God perpetuate his rule and his kingdom! Dated, A. H. 922 [A. D. 1516].

Bada'on.

The first inscription forwarded by Mr. Wilson belongs to the tomb of the Emperor 'Aláuddín or 'Alam Shah, who, soon after A. H. 851, ceded the empire to Bahlúl Lodi, and withdrew to Badaon, where he lived in retirement, and died in A. H. 882. The stone measures about 5 feet by 2½ feet, and is the most extraordinary inscription that has come under my notice. The letters are nearly all without diacritical marks, and are so unusual, that the whole looks like a puzzle (*vide* Pl. I.) With the assistance of several Maulawís of Calcutta and Badaon, I have deciphered the greater portion of it, and can thus give the general purport of the inscription, leaving the complete and grammatical restoration of the text to others.

I.

بنى (؟) معلى مذكوحة السلطان الاعظم العدل البار
علاء الدنيا والدين عالمشا

Second line ه ابن السلطان المرحوم المغفور محمد شاه السلطان طاب ثراهما
و جعل الجنة متواهما موضع پندولی اعمال

Third line تپه جهونه پیرگنده سالباهن * * * مساكن وحوش وطبور كه شمار
كند (؟) موضع مذکور كسى نمانده (؟) مانام له علامه (؟) بمشقت
جانى و مالى احيا و

Fourth line آبانان گردانیده موضع مذکور جاگیر بحکم حدیث نبوی صلی
الله علیه و سلم من احيا ارضا مینة فیه له مالک احمدی بندگی (؟)
بنت معالی گشت مالک مذکوره موضع مسطوره بر حظیره

Fifth line سلطان المزبور و بر حظیره خود باستمرار اگر بغیرد حکم
حاکم بنویته بغیر اکتساب (؟) وقف * شرط حکم وقف (؟) تغیر و
تبدیل کند او عند الله ماخون

Sixth line و اثم مردود (؟) شود درین (؟) اجل تمسک (؟) قال
الله تعالی فمن بدله بعد ما سمعه فانما اثمه على الذين يبدلونه ان الله
سمیع علیم *

متولی موضع مذکور ملک سلامت سلطانی *At the side*

The purport evidently is, that certain waste lands of Mauza' Pindoli, in Tappah Jhonah (or Jhoniah), pergunah Salbahan, were cultivated. A Hadis of the prophet is then mentioned, according to which he who reclaims lands becomes the owner of them. These lands appear to have been set aside for the maintenance of the tombs of Sultan 'Alauddin 'Alau Shah, son of Sultan Muhammad Shah, and his wife. Such a resume *wagf* lands are threatened with divine punishment, according to a passage in the Quran [II, 177].

At the side of the inscription are the words, 'Malik Salamat Sulṭānī, Mutawallī of the above place.'

Mr. Wilson says in a letter.—“There is a village called ‘Pindol,’ and another called ‘Nagar Jhonah’ in pergunah Kot Salbahan of this district [Badion]; but there is no sub-division known as ‘Tappah Jhonah.’ There is nothing particular about the tomb of ‘Alauddin. It is a large square, massive, structure of brick, covered with a vaulted roof, and with the remains of some minarets on the top. In the inside there are two graves

side by side, also a smaller one in the corner, but with no inscription of any kind on them. The tomb is in a very dilapidated condition, and the same may be said of the remains of other smaller buildings near it. Close to the tomb is an old masonry well, which is in working order, and is used for irrigating the adjacent lands."

The tomb, according to Maulaví Muhammad Karím, Deputy Collector of the district, lies in Mirán Sará, a Mahallah of Badáon. The emperor is said to have founded A'lápúr (اعلى پور),* which lies seven *kos* East of Badáon. He had three sons, Ahsan, 'Abbás, Haidar. 'Abbás had no issue. Ahsan founded Sayyidpúrah, outside Fort Badáon, to the south. The place does no longer exist, nor are there any descendants of his. Sayyid Haidar founded Saráí Mirán. His descendants exist to the present day, but they are all poor agriculturists.

II.

Mr. Wilson's second inscription is taken from the gateway of the Jámí' Masjid at Badáon. His reading is as follows:—

ادخلوها بسلام آمدين السطان الاعظم مالك رقاب الامم شمس الدنيا و
الدين غياث الاسلام والمسلمين اعدل الملوك والسلاطين ابوالمظفر ايلتمش
السطان ناصر امير المؤمنين خلد الله ملكه فى شهر رمضان المبارك
سنة ستماية وثمانية عشرين ١١

Enter it in peace! The great Sultán, the owner of the necks of nations, Sham-sud dunyá waddín, the helper of Islám and the Moslems, the most just of rulers and kings, Abul Muza'ffar 'Ilit'mish, [Altamsh] the king, who assists the Commander of the Faithful,—may God perpetuate his kingdom! In the blessed month of Ramazán, 628 [November, 1230, A. D.]

A'la'pu'r.

From the Masjid in A'lápúr, east of Badáon—

III.

قيق بن مرة (؟) قيش دادبك بخطه بداون فى المنتصف من
ربيع الاول سنة سبع وسبعماية ١١

Qíq, son of.....(?), Dádbak [highest judicial officer] in the district of Badáon. In the middle of Rab' I., 707, [September, 1307, A. D.]

The inscription seems to be incomplete.

* So spelt by the Deputy Collector, not علاپور 'Alápúr.

IV.

From inside a mosque at A'lápúr—

بسم الله الرحمن الرحيم ابن مسجد در عهد ابو ظفر محى الدين محمد
اورنگ زیب بهادر عالمگیر پادشاه و عمل جاگیر دیندار خان خوشگی سنه
الف و احدی و سبعین تعمیر یافت

In the name of God, the merciful and the element! This mosque was built during the reign of Abú Zafar Muhiuddin Muhammad Aurangzib Bahádur, 'Alamgir Pádisháh, when Dindár Khán Khweshagí was Jágirdár. A. H. 1071, [A. D., 1660].

This Dindár Khán* belongs to a well known Afghán family, called the *Khweshagís*, or 'relatives,' who settled at Qasúr (قصور, or قسور) in the Bári Duáb. He is twice mentioned in the *Maísir i 'Alamgírí* (pp. 213, 340). The *Maísir ul Umará* gives interesting biographical details of Nazar Bahádur Khweshagí and Husain Khán Khweshagí.

In the Proceedings for March of this year, I gave two other inscriptions received from Mr. Wilson. Maulavi Muhammad Karim suggests two alterations in the first inscription (*loc. cit.*, p. 48). For the unusual چالانال, he reads چالان, a 'well-tank,' which compound appears to me to be as curious as my old reading. The date he reads 898, instead of 798. The rubbing, it would appear, gives هیض *hiṣad*, instead of هض *haffad*, which I chose, and the Maulavi says that هیض in Persian stands for هضد *hashḥad*, not for هضد. In giving the text of the inscription, I mentioned that it was, in point of grammar and sense, the worst that I had seen; and if the writer did use *hiṣad*, he used a form which no Persian knows, nor any dictionary records. Besides, there was no occasion for an artificial *hiṣad*, as *hashḥad* suits the metre as well. But the Maulavi gives a better reason for adopting 898, when he maintains that the second verse is an allusion to Sikandar Lodi, in whose reign a Khán Jahán [Lodí] lived. This Khán Jahán is mentioned in Badáoní and Firishtah. For the three asterisks in the first line, he reads مقاطع *muqāṭi'* 'Jágirdár of the District of Badáon,' which I believe to be correct, although the form *muqāṭi'* should, according to usage, be *muqṭi'*. However the author of the inscription knew as little of grammar as of poetry.

* He is not to be confounded with the Dindár Khán i Bukhárí, who served under Jahángír and Sháhjahán. He was Fanjdár of the Miyáu Duáb, and died in A. H. 1045. *Maísir ul Umará*.

In the *jalús* name of Aurangzib we find, in MSS. and inscriptions, both *Abul Muzaḥfar* and *Abú zafar*.

JOURNAL OF THE ASIATIC SOCIETY.

Part I.—HISTORY, LITERATURE, &c.

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No. II.—1872.  
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The Legend of Bághesar, a deified spirit held in great reverence by the Kúsrú, Súri, Markám, Netia, and Sársún clans of the Gond Tribe.—By Capt. W. L. SAMUELLS, Assistant Commissioner, Manbhúm.

Once upon a time, in a family of the Gond tribe, there were five brothers, named respectively Kúsrú, Súri, Markám, Netia, and Sársún.

On the first occasion on which Kúsrú's wife was pregnant, she brought forth a male child ; but on the second occasion she gave birth to a tiger's whelp. This young cub was treated by its parents with as much affection and regard as their first-born ; and the superior nursing it received, had such a powerful effect on its growth and constitution, that in a few months it grew up to be the finest child of its age and kind that ever was known. From childhood he was the constant companion of Kúsrú, never forsaking his side for a moment ; and so great was the filial attachment he bore towards his unnatural parent, that, to this day it is said in praise of him, he was never known to have injured Kúsrú in any way. To the Gond mind no doubt this was a most remarkable trait of character ; for what is the experience of their lives from day to day, but that of the strong lording it over the weak.

Kúsrú, whose occupation was husbandry, had taken to tilling jungle lands near his village, and during such time as there were crops in the ground, he used to spend the greater portion of it in watching them. But at one time it so happened that for some days past he had been less vigilant than usual, and the *nílgái* and *sámbar*, making the best of the opportunity, well-nigh ruined the crop and Kúsrú's prospects. However, it was better to save what remained than lose all, thought Kúsrú philosophically ; so he

huddled himself close by the field, and night and day watched without ceasing. Weary days and nights were those for Kúsrú, and little wonder was it that—

‘One beautiful night
When the stars shone bright’

Kúsrú’s head went nid-nid-nodding, and his eyes, sore and weary from watching, dropped the curtains and went to sleep. But whilst he slept, the young cub watching, saw a trespasser approach. So placing his paw gently on Kúsrú’s shoulder, he roused him from sleep, and by signs and gestures drew his attention to a noble looking sámbar, who was making himself at home amongst the young and tender úrid plants.

Kúsrú, however, instead of being quickened to action by the sight, fell into a desponding state; and tearing his hair and bemoaning his ill-fortune, sunk to the ground and cried aloud, ‘Oh, that mine enemy might be swallowed up!’ The young cub, moved by this despairing and touching appeal, instantly crouched and sprung upon the deer, which it killed and tore to pieces; making emphatically no bones about the matter. And so from day to day, till the crop was gathered, the young cub watched and slew, and thus saved Kúsrú’s field from further injury.

For this great act of deliverance, Kúsrú began to love the young cub as he never before had loved him, with a love in fact that was little short of idolatry. But Kúsrú had at length to experience the bitter truism that ‘all flesh is but as dust;’ for, alas, a day came—‘the long, long, weary day’ of Kúsrú’s existence—when the young tiger departed this life and gave up the ghost. In other words he died and became a *bhút*!

Kúsrú was inconsolable, and his wife by no means improved matters by presenting him at such a time with an addition to the family in the shape of a daughter. If she had only kept up the tiger progeny, she might possibly have helped thereby to fill up that aching void which was gnawing at Kúsrú’s gizzard. He ate not—he slept not; and how life was sustained during the following space of ten or twelve years, we are not informed.

Tradition, not to be burdened with such trifles, hurries us on to the period when Kúsrú’s daughter had matured into a plump and buxom lass, and veiled and decked as a bride in turmeric-stained garments, looking as fine as a carrot fresh-scraped, we find her seated with a bridegroom at her side under a leafy marriage-bower, which has been erected for the occasion within her father’s court-yard. Kinsmen and acquaintances from far and near have come in holiday attire to offer their congratulations and enjoy the fun, and are to be seen crowding round the *marwá*, or bower, with joyful faces and sparkling eyes. Even Kúsrú, forgetful of his old sorrows, is determined to make merry with the rest, and is to be seen urging the drummers and pipers to increased

exertion, as if in all conscience they were not making enough din and noise already. But the time and occasion perhaps require it.

The ceremony is at a close, and the nuptial knot has been tied. Three hours have passed in tedious rites and ceremonies. The happy couple with the bride's-maids and best man have all been kissed and marked with the sacred symbols times out of number, first by one relation and then by another. The bride and bridegroom with their garments knotted together have, with mincing steps, slowly and wearily crept seven times round the *blaumra*, or branch, which forms the central support to the bower. The rice given in dowry has been measured out to the same mystical number of seven times. Everything, in short, has been done that ought to have been done, and the wedded couple are now about to retire within the house, whilst the spectators withdraw to the green outside to dance, sing, and make merry.

But the attention of every one present is suddenly arrested by fiendish yells and roars.

"What is it? Who is it?" is the anxious enquiry of every one as the words pass from mouth to mouth with wind-like rapidity. With quivering accents and bated breath the answer comes speedily back, that one of the company has become (demoniacally) possessed with a demon. A thrill of mingled terror and dismay ran through the whole party at the sudden news of so untoward an event, for

"When the sun sets, who doth not look for night?"

The most civilized community on earth could not fail, on a similarly joyful occasion of their own, to be overcome with, at least, a sense of gloom, if one of their number on the spot went suddenly mad or hysterical. But amongst a people naturally superstitious, and that to a degree almost incredible, the circumstance before alluded to had a wider and deeper significance than anything we can possibly imagine.

Falling into the midst of the company, the individual possessed is dashing his body about on the ground; up and down; right and left; driving the lookers on from post to pillar, and from pillar to post; and, by his wild and fiendish actions, striking consternation and terror into the hearts of all; for a visitation of this sort had never on such an occasion been known before.

Kúsrá's spirits went down with a run, and looking as grave as a judge, he implored the Baigá, or village priest and necromancer, to divine whose spirit this was, and for what purpose it had come.

Forthwith the Baigá, with an air of authority worthy of an exorcist, interrogates the spirit, saying—

Speak ! speak ! thou fearful guest !
 Whose spirit haunts thy breast ?*
 Why thus as one possessed
 Come ye to daunt me ?

Amidst a breathless silence, the demoniac giving the wretched Kúsrú a piercing look of recognition, informs him and his terror-stricken guests in a voice peculiar to gnomes, bogies, goblins, and such like fry,

I was a tiger bold !
 My deeds, though manifold,
 No Gond hath yet extolled,
For this I sought thee.

Kúsrú is thunder-struck, and the company in dumb show betoken bewilderment, whilst the restless and impatient spirit roars, ‘Worship me with offerings and sacrifices.’

A fowl was immediately fetched for the purpose of being offered up in the orthodox fashion ; but the spirit evinced such unmistakeable signs of dissatisfaction at the very sight of this familiar bird, that a kid was instantly brought to be sacrificed in its stead. As soon as the demoniac espied that animal, he sprang at it after the fashion of a tiger, and, seizing it between his teeth, gnawed and tore it to death.

Kúsrú’s joy at this sight was unspeakable ; for there was a something in the killing way in which the demoniac went to work that revealed to him beyond a doubt, that the spirit present was of a truth no other than that of his favourite tiger-son. So he brought out a pot of the last home-brew, and some of the finest and purest ghí which his store contained wherewith to treat his welcome guest.

Three leaf-cupfuls of the former were poured down the demoniac’s throat and a handful of ghí forced into his mouth, whereupon the spirit being satisfied went out of the man, and took its departure for the shades below, leaving Kúsrú dilated with joy, but the company *en masse* in grave doubt as to the light in which this apparently unwarrantable intrusion ought to be regarded.

But they soon received the assurance of Kúsrú and the Baigá that this little novelty which had so alarmed every one at the first was the happiest omen possible. So from that day forth, the spirit of Kúsrú’s tiger-son was deified and worshipped under the name of Bighesar by the five Gond clans descended from, and respectively named after, the brothers Kúsrú, Súrí, Markám, Netia, and Sarsún.

* “Speak ! speak ! thou fearful guest !

“Who with thy hollow breast, &c.”

Longfellow’s *Skeleton in Armour.*

The substance of the above was told me by a Gond of the Kúsrú clan, at the marriage of whose daughter I was present; and it was then that I witnessed the pranks of the demon Bágghesar from which I was led to make enquiry as to his antecedents.

It is only at the marriages of members of the five clans, who are named in the heading to this paper, that Bágghesar manifests his presence in the manner narrated in the story. With them he is held in reverence as a *deified* spirit; but with other Gonds, Bágghesar is simply one of the many spirits to whom propitiatory offerings are yearly made. According to the latter he has no such origin as that ascribed to him by the five clans before-mentioned, but is simply regarded as 'the concentrated essence of spirits', which have issued from those Gonds who have met their deaths by tigers; for, according to local belief, the spirits of all Gonds thus killed, are said to unite and form the one great spirit Bágghesar; and it is simply with a view to saving their flocks and herds, and their own lives also, from the ravages of tigers that the inhabitants of every Gond village yearly make offerings to propitiate this demon. And to this extent I find the same spirit is known and propitiated by the people of these wild parts generally.

At the marriage ceremony which I witnessed, Bágghesar entered into and possessed two men. One was the *pujári* or priest, and the other a looker on. The *pujári* is always told off specially for this duty, in case none of the company should happen to get involuntarily possessed. A woman, on the occasion referred to, was also taken worse, but got quickly bundled out of the way from motives of public decency.

The manner in which the two men seized the kid between their teeth and by that means killed it, was a sight which could only be equalled in a zoological garden or menagerie on feeding days.

But this exhibition of fiend-like butchery is only allowed to be partially witnessed, for, as soon as the kid has been fairly pinned, the members of the family who are standing by, throw blankets or cloths over the demoniacs, as they say it is a sight not fit for all eyes to behold; a point which no civilized being would be likely to dispute with them.

The demoniacs I saw, were permitted to exercise their teeth on the kid's carcase some time after it had sounded its last gurgling note: and this indulgence, judging from the motions of the covering cloths, was entered into with an amount of zest and gusto that was positively brutal; and from an orange-sucking sound that was occasionally audible, a horrid suspicion crossed my mind that they had even gone to the extent of blood-sucking, though of this I could not be positive.

The bride's father at length dragged out the mangled and lifeless body of the kid and put it aside; and the men emerging from their covering disported themselves like electrified frogs *à la* Ghánásán, another gentleman

of the infernal regions whose acquaintance I made in these parts, and who throws those whom he possesses into a state suggestive of one attacked simultaneously with hysterics, epilepsy, ague, and colic, a fearful combination, it is true, and to fully realise which, the reader must make a trip to Chāng-Bhokār, which, geographically speaking, is one of the Chutiā-Nāgpur Tributary States, but which psychologically, I think, must be one of the outlying provinces of Pandemonium.

The bride's father having treated each of the demoniacs to three cupfuls of liquor and a mouthful of ghī, Bāghesar's spirit vanished, leaving both the men considerably blown and exhausted.

During the whole of this scene not a soul spoke, and the general impression seemed to be, that it was too solemn a matter to be sneered or laughed at. Still no marriage ceremony is complete without it, and, according to Gond ideas, fortune smiles on the wedded couple when Bāghesar appears.

If the bride's parents are poor and have not the means to afford a kid, a pig is given instead. This I should think can't be quite so pleasant for the demoniacs, but the fun no doubt would be considerably enhanced to those lookers-on who, like myself, had nothing to fear from Bāghesar, and could therefore with impunity smile at his pranks.

Of the extraordinary nature of the scene in general, no description could ever supply a perfectly accurate conception; but, as an illustration of the superstitious belief and worship of one of the most interesting of the aboriginal tribes of India, it is nevertheless worthy of record.

Essays in aid of a Comparative Grammar of the Gaurian Languages.—By REV. A. F. RUDOLF HOERNLE, D. Ph., Professor of Sanskrit, Jay Nārāyan's College, Benares.

I.—Introductory.

It may be convenient to have a collective name for all North-Indian languages derived from the Sanskrit. As Dravidian is now, after the example set by Dr. Caldwell in his Comparative Grammar of the Dravidian languages, the name generally received to designate the non-Sanskritic languages of South India, and as Gaurian (गौड़) is the term commonly used by Sanskrit writers as the correlative to Dravidian (द्रविड़), it appears to be the simplest plan to appropriate the term Gaurian for the Sanskritic languages of North India.*

The following languages must be accounted Gaurian: viz., the Oriyā, the Bangālī, the Hindī, the Naipālī, the Marāṭhī, the Gujarāṭī, the Sindhī,

* If I am not much mistaken, I have already seen the word Gaurian employed by some writers in this wise, so that its use by me is not a novelty.

Note to p. 119.

Bághesar means ‘the Tiger-God,’ from *bág’h*, a tiger, and *eshwar*, ‘God.’ Compare also Herklots’s ‘Manners and Customs of the Mussulmans of India,’ p. 220,—“After the demoniac is well filled with the devil, he sometimes screeching takes a *kakra* (large wick), continues lighting and extinguishing it by putting the lighted end into his mouth; *some, biting the neck of a fowl, suck its blood.*”

2015

the Panjābī (or Gurmukhī), and the Kashmirī. They are divided into two groups by some striking grammatical peculiarities, of which I may here mention two, which will more immediately concern us in the following essays. One is the possession of an eighth case of agent (over and above the common seven Sanskrit cases), formed by the post-position न (or नै; in the Naipālī, ल); a correlate of which is the absence of an organic past tense of the verb. The other is the adjective character of the genitive post-positions, which agree with the noun which they qualify, in gender, number, and case. These peculiarities are possessed by all Gaurian languages except the Oriyā and Bangālī, which two latter, therefore, form a group by themselves; the remainder making up the other group.

The Hindi is the most extensively spoken of all the Gaurian languages. Its area consists of nearly 10,000 square miles, and extends from the River Gaṇḍak in the east to the Satlaj in the west, and from the Himalaya in the north to the Vindhya Mountains in the south. But a distinction must be made between the high Hindi and the low Hindi, the mutual relation of which shows many striking resemblances to that between the high and low German. I take here the terms high and low in their ordinary sense, meaning by high the cultivated, the language of literature, and by low, the vulgar spoken dialects. The high Hindi is used almost exclusively for literature over the whole area, and is understood everywhere; though it is perhaps nowhere spoken in its purity by the people: at all events, it is spoken only by the higher and educated classes. The high Hindi does not differ from the Urdū in its grammar; and in its vocabulary only so far, that it substitutes for all foreign (*i. e.*, Persian or Arabic) words, others transferred to it *directly* from the Sanskrit. It arose gradually by the substitution of Sanskrit words partly for foreign words, partly for such Prākṛit words as had become, in the course of time, obsolete or vulgar; and the cause of this substitution was partly the revival of Hindū patriotism, partly the impetus given to Hindi literature through the introduction by the English of vernacular education and Christian missions. It is, therefore, a comparatively modern language. In fact, its formation and growth is still going on, as any one who takes an interest in such matters may verify by personal observation.

While the high Hindi is uniform and spread over the whole area of the Hindī, the low Hindi consists of many dialects differing more or less among themselves and confined to different provinces. But they may be divided into two great classes, of which the Braj Bhāshā and the (so-called) Gaṇwārī, respectively, are typical. The former class occupies the western, the latter the eastern half of the Hindī area. Roughly speaking, the boundary line may be drawn at 80° Long. To the western class belong, besides the typical Braj Bhāshā spoken in the Agrā and Mathurā Districts, the Dialects of

Gwáliár, Alwar, Jaipúr, the Márwáří dialect, &c. To the eastern class belong, beside the typical Ganwáří spoken in the Benares Division, the Baiswáří* dialect of Audh, the Maithilí dialect of Tirhut, and others. The differences between these two classes are so great as to constitute them almost two different languages; for the Ganwáří and its class of dialects participate in most of the characteristics of the Bangálí class of the Gaurian languages, while the Braj Bháshá class of dialects share those of the other Gaurian languages. The Ganwáří, as its name which means 'rustic' or 'vulgar' (ग्रामवारी, confined to villages) indicates, has never received any literary cultivation, and is confined to the low and uneducated part of the population. Throughout the whole area of the latter, a more or less pure high Hindi is spoken and written by the higher and the educated classes. Hence here the area of the Hindi class of the Gaurian languages and that of the Bangálí class overlap each other, the Ganwáří forming a sort of transition language between the two. The Braj Bháshá on the other hand has begun from early times to receive some literary cultivation. Most Hindi poets within the last 400 years (*e. g.*, Kabír, Biháří Lál, Súr Dás, Tulsi Dás, &c.) have employed it principally in their poems. Hence it has become the mother of the Urdú and high Hindi. The latter derive by far the greatest part of their grammar and vocabulary from it. In fact, it is distinguished from the high Hindi chiefly by a greater roughness and a greater abundance of its grammatical forms. Grammars of the Braj Bháshá have been written in modern times, *e. g.*, by Ballantyne, and in the Hindi and Hindústání Selections; and perhaps the best known prose work written in it is the *Ríjaníti*, a translation of the Sanskrit *Hitopadeshá*.

Two opposite opinions are held by different scholars regarding the nature of the Gaurian languages. While some Orientalists consider them to be, with trifling exceptions in the vocabulary, wholly Sanskritic, others admit large un-Sanskritic additions, both in the grammar and in the vocabulary. According to Dr. Caldwell,† *e. g.*, "the grammatical structure of the spoken idioms of Northern India was from the first, and always continued to be, in the main Scythian; and the change which took place when Sanskrit acquired the predominance as the Aryans gradually extended their conquests and their colonies, was rather a change of vocabulary than of grammar; a

* The derivation of Baiswára is uncertain. According to some Pandits, it is connected with the word वैश्वानर, which is said to be the name of a Kshatriya tribe living in Audh, who gave to their country the name of the Baiswára country, and to their dialect the name of the Baiswáří dialect. According to others, it is a modification of वैश्यवारी. The meaning of the name would then be: the dialect confined to the Vaisyas, or rustics; and it would be almost identical with the meaning of the name Ganwáří, which is a modification of ग्रामवारी, *i. e.*, confined to villages.

† Comparative Grammar, p. 38.

change not so much in arrangement and vital spirit as in the *matériel* of the language. Seeing that the northern vernaculars possess with the words of the Sanskrit a grammatical structure which in the main appears to be Seythian, it seems more correct to represent these languages as having a Seythian basis with a large and overwhelming Sanskrit addition, than as having a Sanskrit basis with a small admixture of a Seythian element.* If this theory should be true, the Gaurian languages could no more be accounted Sanskritic or Indo-European, any more than the Drávidian languages. For languages must be classified according to their grammatical structure.* Otherwise, English (Johnsonian English at all events) would have to be counted among the Romance, and Urdú among the Semitic languages. But the whole question is hardly yet ripe for adjudication. The Gaurian languages have as yet had very little attention paid to them as regards their nature and origin. Moreover in such an investigation a serious difficulty is met with at the outset in the extreme want and inaccessibility of the Gaurian literature dating from the time when the Gaurian languages took their origin (about 800 to 1200, A. D.). As up to this time the Aryan population of North India, who had immigrated many centuries before, had used exclusively Sanskritic languages (Sanskrit, Páli, Prakrit), it would be a most remarkable phenomenon, if they, a Culturvolk, had now exchanged their native grammar for that of the uncultured and despised aboriginal population; supposing that the language of the latter was really a non-Aryan one, and that it had really survived the long Aryan occupation; both suppositions by no means established as yet. It has happened more than once that a conquering nation (especially, if inferior in culture), while retaining more or less its native vocabulary, adopted the grammar of the conquered people (as the Normans in England, the Arabs and Turks in North India, the Franks in Gaul), under the condition that this process commenced from the very first beginning of the conquest. But that the conquerors, after having resided for centuries in the country and retained their native language (both in grammar and vocabulary, trifling instances in the latter excepted) entirely unmixed with the aboriginal languages, should abandon their own grammar in favour of that of the conquered, requires strong proofs to be credited, especially as it is by no means certain whether the aboriginal languages at all survived at so late a date; for, according to the evidence afforded by the Prakrit of the plays, Prakrit was spoken by the low class population, which was composed, no doubt, principally of the subjugated aboriginal people, who, therefore, either spoke a Sanskritic language from the first or adopted the vulgar dialect of the language of their conquerors.

* Compare Max Müller's remarks in *Lectures on the Science of Language*, lect. II., pp. 86-90 (6th Ed.).

If by a more thorough investigation of the Gaurian languages it can be shown, that they are entirely Sanskritic, this will, on account of the many undoubted resemblances between the Gaurian and Dráviḍian languages (cf. Dr. Caldwell's *Comparative Grammar*, pp. 34 to 39), materially affect our view of the classification of the latter. However, this problem awaits yet a thorough scientific enquiry. And the following essays are offered as a slight contribution towards its solution. For the inflexional post-positions of the Gaurian languages are, above other points, considered to be evidences of the Dráviḍian* or Scythian† character of their grammatical structure.

Essay II.—On the Post-Positions of the Genitive.

The present essay will be devoted to the elucidation of the nature and origin of the post-positions of the genitive. They are the following :—

In the High Hindí,	-	-	-	का, की, के ;
Braj Bháshá,	-	-	-	कौ, की, के ;
Alwar Dialect,	-	-	-	को, की, के, का ;
Ganwári,	-	-	-	कै, के ;
Maithilí,	-	-	-	क ;
Naipáli,	-	-	-	को, की, का ;
Maráthí,	-	-	-	चा, ची, चें, चे, चा, चीं ;
Gujarátí,	-	-	-	नो, नी, नुं, ना, नां ;
Panjábí,	-	-	-	दा, दी, दे ;
Sindhí,	-	-	-	जो, जी, जे, जा ;
Bangálí,	-	-	-	एर or र ;
Oriyá,	-	-	-	र ;

The only attempt at an explanation of the origin of these post-positions that I remember to have met with, is one made by Bopp in his *Comparative Grammar*, para. 340, note.‡

He compares the Hindi genitives formed by means of the post-positions का, etc., with the Sanskrit genitive plural अस्माकम् of अहम् I, and युष्माकम् of त्वम् thou, etc. These words are possessive pronomina (*our* and *your*) formed by the affix क. Others also have referred to this Sanskrit affix क or कौय, which expresses relation or possession, as an explanation of the Hindi post-positions. But there are serious objections to this theory.

* By Dr. Stevenson, in the *Journal of the Bombay Asiatic Society*.

† Cf. Dr. Caldwell's *Comparative Grammar*, p. 39. He seems, however, inclined to admit a Sanskritic origin of the genitive post-positions, cf. p. 246.

‡ He says: Es verdient bemerkt zu werden, dass im Hindostanischen die Formen, die man in beiden zahlen aller declinations-fähigen woerter als genitive aufstellt, sich als unverkennbare possessiva herausstellen, dadurch dass sie sich nach dem Geschlechte des folgenden Substantives richten. Die pronomina erster und zweiter person haben im masc. rá, im fem. rí, als possessiv suffix, die übrigen woerter im masc. ká, im Fem. kí ; ká aber stimmt zum skr. suffix ka von asmáka, yusmáka, māmaka, tāvaka.

The form of the word to which the post-positions are added, is not *always* the pure base, as the addition of the Sanskrit affix would require, but already *inflected* (e. g., घोड़े in घोड़े का, of a horse, is not the simple base of the word घोड़ा, but an inflected form of it). Again, it is most unlikely that elements like the affixes क, कोष, etc., which occur in Sanskrit only as integral parts of a word, but never by themselves as independent words, should have, in a comparatively modern language, separated themselves from the body of the word and assumed independent life (as post-positions) similar to that of prepositions. It would be a phenomenon contrary to those that have been observed in all other cases of (what Max Müller calls) dialectic regeneration. It is clear also that by this theory the other post-positions (as स, में, ने) cannot be explained. But there can be no doubt that, whatever the true explanation be, it must be the same for all post-positions. For these reasons among others, any theory which traces the post-positions to Sanskrit affixes cannot be the true one. Their explanation must be sought for in a different direction.

In the first place, it may be remarked that the term "post-position" is misleading. It gives the idea as if the words, to which it is applied, belonged to that class of words which includes the prepositions, conjunctions, etc., *i. e.*, elements of language which are incapable of either derivation or inflexion. Now most of the so-called post-positions of the genitive are capable of both. They have clearly a nominal or more accurately an *adjective* character. For the Hindi का, को, के, agree with the noun which they qualify, in case, number, and gender, exactly as for instance, अच्छा, अच्छी, अच्छे, good. If the qualified noun is a masculine singular nominative, then का is used; if a feminine singular or plural, then को; if a masculine plural nominative, then के; if a masculine in any *oblique* case, then के. The same is the case with the Panjabi दा, दी, दे, the Braj Bhashā कै, को, के, etc. In the Sindhi, जा and जो are used like का and को in High Hindi; जा is used, if the qualified noun is in the masculine plural nominative, and जे is used, if it is a masculine in any *oblique* case singular or plural. With this agrees the use of the post-positions को, को, का, के, of the Alwar and Jaipur dialect.

After these explanations the following scheme of the agreement* of the

* This agreement is not altogether perfect; but neither is the agreement of the *real* adjective with its substantive more so; e. g., in Hindi, को and के ought to have a different form in the plural; probably these plural forms are irregularly adopted from the singular; but then अच्छा, good, has also both in the singular and plural अच्छी, अच्छे. Originally, the agreement was much more perfect. This is clearly proved by the Marāṭhī, where "sometimes, in poetry, the adjective takes a case-form corresponding to that of the noun it qualifies; thus:

दाखकरावें भावें न असावें मानसैं उदासीनैं "

Student's Manual of Marāṭhī Grammar, p. 39.

Gaurian genitive post-positions with the noun qualified by them will be easily understood—

	SINGULAR.						PLURAL.					
	Direct case.			Oblique cases.			Direct case.			Oblique cases.		
	mas.	fem.	neutr.	mas.	fem.	neutr.	mas.	fem.	neutr.	mas.	fem.	neutr.
High Hindí,	का	की	—	के	की	—	के	की	—	के	की	—
Braj Bháshá,	कौ	की	—	के	की	—	के	की	—	के	की	—
Alwar dialect, ...	का	की	—	के	की	—	का	की	—	के	की	—
Ganwárá,	कै	कै	—	के	के	—	कै	कै	—	के	के	—
Maithilí,	क	क	—	क	क	—	क	क	—	क	क	—
Naipálí,	को	की	—	का	की	—	का	की	—	का	की	—
Maráthí,	चा	ची	चें	चा	च्या	च्या	चे	च्या	चीं	चा	च्या	च्या
				or	or	or				or	or	or
				चे	चे	चे				चें	चें	चें
Gujarátí,*	वो	नी	नुं	ना	नी	गां	वा	नी	गां	ना	नी	नां
Panjábí,	दा	दी	—	दे	दी	—	दे	दी	—	दे	दी	—
Sindhí,	जा	जो	—	जे	जा	—	जा	जो	—	जे	जा	—
Bangálí,	एर	एर	एर	एर	एर	एर	एर	एर	एर	एर	एर	एर
	or	or	or	or	or	or	or	or	or	or	or	or
	र	र	र	र	र	र	र	र	र	र	र	र
Oriya,	र	र	र	र	र	र	र	र	र	र	र	र

The *adjective* character of these so-called post-positions indicates that we must look for a *nominal* source of them in Sanskrit.

It is a well-known observation that in poetry and in the vulgar dialects, old grammatical forms are often preserved which have been altogether lost in the cultivated dialects. These archaic forms do the same service to the student of language as fossil remains do to the student of geology. They discover to us language in its earliest state from which it has developed into its present form.†

In the Ganwárá dialect, sometimes, there is found in the genitive the post-position कर, or करे, instead of कै. It is there confined to the pronominal declension; e. g., इस का, of him, is in Ganwárá एकर, or एकै; इस के is एकरे, or एकै; इन का, of them, is एन्हकर, or एन्ह कै; इन के is एन्हकरे, or एन्ह के; again,

* The forms as in use among the Maráthís and Gujarátís settled in Benares and Gayá (and probably anywhere in the Hindí country) differ slightly from those given above. In Maráthí the form of the direct case plural of the neuter is चें, instead of चीं, and in the Gujarátí, the form of the oblique cases singular in all three genders is alike ने, instead of ना, ने, नां. These differences are evidently merely assimilations to the Hindí.

† "In every country it is in the poetry and in the speech of the peasantry that the ancient condition of language is best studied." Dr. Caldwell, *Comp. Gram.*, p. 31.

किस का घर, whose house, is in Ganwāri केकर घर, or केके घर; किस क घर में in whose house, is केकरे घरे, &c. The same post-position करे is frequently met with in the Ramāyana of Tulsi Dās (about 1650, A. D.). But there it is not confined to pronouns, but also used in connexion with nouns, *e. g.*,

चबि जाति कर रोष ॥ *i. e.*

High Hindī: चबियों की जाति का क्रोध ॥

Lankā kaṇḍ.

Besides कर, Tul-si Dās uses sometimes another form which is still more archaic, viz. केर, or केरा, केरी, केरे. They are used exactly as का, को, के; as केर (केरा) corresponds to the Ganwāri क, so केर to the Ganwāri करे; *e. g.*, केरा occurs in the following verse:

भिर आनज सब शब्द केरा *i. e.*

High Hindī: भिर ले आये सब शब्दों का.

Lankā kaṇḍ.

(Here possibly केरा might be used as a Nom. Pl., like का in the Alwar and Jaipur dialect, and जा in Sindhi).

Again, एक नारि व्रत रघुपति केरा ॥ *i. e.*

High Hindī, एक स्त्री रखना व्रत है राम का ॥

Again, केरो occurs in the following verses:

सगुन प्रतीति भेंट प्रिय केरो ॥ *i. e.*

High Hindī: सगुन की प्रतीति से प्रिय की भेंट (जानती है सीता) ॥

Ayudhyā kaṇḍ.

Or: सुनि कठार बाणी कपि करी ॥ *i. e.*

High Hindī: सुन के कठार बाणी बन्दर की ॥

Lankā kaṇḍ.

Or: अब सो सुनऊ बांह तेहि केरी ।

गइ जिमि लङ्क लषण भर प्रेरो ॥ *i. e.*

High Hindī: अब वह सुना कि बांह उस की ।

गयी जिस प्रकार से लङ्का को लक्षण के बाण से फेंकी हुई ॥

Lankā kaṇḍ.

Again केरे occurs in the following verses:

बन्दै पदसरोज सब केरे ॥ *i. e.*

High Hindī: मैं नमन करता ऊ सरोज सदृश पद सभी के ॥

Bāla kaṇḍ.

Or: र किरोट दशकन्धर केरे ॥

High Hindī: ये किरोट हैं दशकन्धर के ॥

Lankā kaṇḍ.

An example of कर occurs in the following verse:

सो सुग्रीव केर लघु धावन ॥ *i. e.*

High Hindī: वह सुग्रीव का छोटा धावक है ॥

Lankā kaṇḍ.

A contemporary of Tulsí Dás was Súra Dás (about 1650, A. D.). The following instances of the use by him of the same words (केरो or केरा, केरो, केरे) are taken from his poems called the Súra Ságar—

को तेरा पुत्र पिता तू काको मिथ्या भ्रम जग केरो ॥ *i. e.*

High Hindí : कौन तेरा पुत्र पिता तू किसका, यह मिथ्या भ्रम जगत् का है ॥
Saravali 12.

Or : भरोसा दब इन चरनन केरो ॥ *i. e.*

High Hindí : भरोसा दब है इन चरनों का ॥

Saravali.

Or : भजिले भिरभोर नाथहीं सकल सुखद केरो ॥

High Hindí : पूजन कर सिर मोर नाथ को सकल सुख देनेवालों की ॥

Nitya Kirtan, 49.

Considerably older than both Tulsí Dás and Súra Dás is *Kabír*. He lived about 1500, A. D. His *Rekhtahs* offer many instances of the use of केरा, केरी, केरे, as signs of the genitive. A few of them are the following :

खुकर खान के जन्मै धरई ।

जो गुरु केरी निन्दा करई ॥ *i. e.*

High Hindí : खूबर और कुत्ते के जन्म को धरेगा ।

जो गुरु को निन्दा करेगा ॥

Or : आखर केरे वषत् में बन्द किसका करौगे दीदार ॥ *i. e.*

High Hindí : अन्त के काल में है बन्द किसका करोगे दर्शन ॥

Still further back we come to *Chand Bardai*, who lived about 1200, A. D. An instance of the same use of केरे occurs in the following verse taken from his great epic the *Prithirāj rāyasá*.

दैरे गज अम्ब चडवान केरो ॥

Book XIX, 41.*

If we now turn to the *Prákrit*, we find sometimes an adjective noun केरिक्, or केरक्, inserted between the genitive and the noun qualified by it. In such cases, the insertion appears to be perfectly *pleonastic*, that is, the sense is complete, even if the word केरिक्, or केरक्, be altogether omitted. Whenever केरक् is thus inserted, it agrees with the qualified noun in case, number, and gender, *i. e.*, is treated as an adjective ; *e. g.*,

* Unfortunately I have been unable to obtain a copy of Chand's epic, and, therefore, must content myself with giving this single example, which by a happy accident occurs in one of the notes appended by Mr. Beames to his translation of the 19th Book, printed in the Journal of the Asiatic Society of Bengal, Part I, No. III, of 1869. As I have not the context, I cannot speak with certainty; but my suggestion as to the nature of केरो might perhaps be a solution of the difficulty which Mr. Beames felt in the meaning of the verse. It might explain the verse, without taking केरो as a verb and altering it into केरौ, which is an objectionable emendation; for there is (as Mr. Beames himself admits) no verb केरो in Hindí; and the words "to overthrow" in such a connection are an anglicism.

तुमपि अपि कोरिक् जादिं ण सुमरेसि ॥

Skr. त्वम् अपि आत्मनः जातिं न स्मरसि ॥

High Hindí: तू भी अपनी जाति को नहीं स्मरण करता है ॥

Mrichhakati, Act VI.

Or: मम केरकेण भक्षपरिवरणं पारलोदयो भक्ता अपेक्षीयदि ॥

Skr. मदीयेन भक्षपरिवयेन पारलौकिको भक्ता अन्विष्यते ॥

High Hindí: मेरे भात का खर्च करके परलोक सम्बन्धी कामो खोजा जाता है ॥

Ditto, Act I.

Or: कस्मै केरकं एदं प्रवहणं ॥ *i. e.*

Skr. कस्य एतत् प्रवहणम् ॥

High Hindí: किस का है यह प्रवहण ॥

Ditto, Act VI.

Or: मम केलिकं पुष्पकलंडकं जिषुज्जाणं पवेक्षिष्य ॥ *i. e.*

Skr. मदीयं पुष्पकरण्डकं जीर्णाद्यानं प्रविश्य ॥ or

High Hindí: मेरे पुष्पकरण्डक पुराने बगीचे में प्रवेश करके ॥

Ditto, Act VIII.

Or: जदि मम केलिका वद्धवालिष्या, ता चिड्डु दाव मुहूर्तम् ॥ *i. e.*

Skr. यदि मदीया वध्यपालिका, तदा तिष्ठतु तावत् मुहूर्तम् ॥ or

High Hindí: यदि मेरी मारने की पारी है तो ठहर जाए मुहूर्त भर ॥

Ditto, Act X.

In the two last examples, the common interchange of र and ल has taken place.

It may be noted in the foregoing examples, (1) that in none of them केरक (or केरिक्) has a *predicative* sense. Were we to translate it by "made or wrought," it would turn the sentence into nonsense. It is every where perfectly superfluous, the sense being complete without it; (2) that केरक is used *pleonastically*, namely, that although inserted only in connection with a *genitive*, it is not yet used by itself to determine the genitive, but always employed over and above the ordinary genitive, hence forming a sort of double or *pleonastic* genitive; (3) that केरक is used in connection with *pronouns*. Compare in this respect the use of कर in Ganwari with pronouns only. There are, however, instances in which केरक is also used in connexion with nouns; *e. g.*,

एमे खु अलङ्कारयो अज्जया केरयो ॥ *i. e.*

Skr. एष खलु अलङ्कारः आर्यायाः ॥ or

High Hindí: यह तो भूषण है अर्या का ॥

Ditto, Act IV.

Or: एमे खु प्रवहणे अज्जचारदत्ताद केलके ॥ *i. e.*

Skr. एतत् खलु प्रवहणं आर्याचारदत्तस्य ॥ or

High Hindí: यह तो गाड़ो है आर्याचारदत्त की ॥

In these examples, **केरक** still forms a *pleonastic* genitive. But some places occur where the original genitive termination is altogether dropped, and instead **केरक** is joined to the *crude* base, with which it forms a *compound*, and thus determines by itself the genitive case, *e. g.*,

पेकवदु अज्जा अक्केलके गच्छदुचारं ॥ *i. e.*

Skr. प्रकृतं अर्थः अस्माकं गृहद्वारम् ॥ or

High Hindî : देखो आर्य हमार घर का द्वार ॥

Ditto, Act IV:

Or : राजशालसंस्थानकेनकं हंगं शूलं चक्राडिउड्डिअं ददस्सं ॥ *i. e.*

Skr. राजशालसंस्थानस्य अहं शूलः चक्रपरिवर्तिनं दास्यामि ॥ or

High Hindî : राजशालसंस्थान का मैं सिपाही हूँ गाड़ी चलाऊंगा ॥

In these examples **केरक**, evidently, forms no more a *pleonastic* genitive, but itself determines the genitive case of the word with which it is *compounded*, in the place of the real original case affix. It has clearly not only lost its *predicative* meaning, but has become altogether a determinative element, or a sort of affix.

But what was originally the meaning of this word **केरक**, and how did it come to lapse into the condition of a mere affix? In order to answer this question, we must go back to the Sanskrit. In one place **पकेलक** occurs *instead* of **केरक**, *viz.* :—

तुह पकेलके पवहणे जेण तुसं अगदो अहिलुहमि ॥ *i. e.*

Skr. तव प्रकृतं प्रवहणं येन त्वं अग्रतोऽधिराहमि ॥ or

High Hindî : यह तेरी अपनी गाड़ी है कि तू आगे चढ़ता है ॥

The Sanskrit equivalent of **पकेलक** is **प्रकृत**.* The noun **प्रकृति** means 'nature,' that which distinguishes one from another. Hence, **प्रकृति** may mean, natural, peculiar, or *own*; for what is peculiar to one, that is one's *own*. The word **पकेलक** therefore means *own*, and was originally inserted after the genitive to emphasize the *possessive* sense of the genitive. But in course of time, this original object of the insertion of **पकेलक** was lost sight of, and it was used simply to express the genitive itself. In fact, it may be shown that the genitive in many other languages arose by some such process.† As

* Literally it is **प्रकृतक**; but it is a very common practice in Prakrit, of which numberless instances are found in the plays, to add the affix **क** to Sanskrit words without any effect upon the sense of the latter (cf. Pr. Prak. iv, 25, Com.).

† A good illustration of the process is mentioned by Max Müller in his Lectures on the Science of Languages. In Lect. II, page 79, he quotes the following remarks from an American paper about the Negro-English. "As to *Cases*, I do not know that I ever heard a regular possessive, but they have begun to develope one of their own, which is a very curious illustration of the way inflectional forms have probably grown up in other languages. If they wish to make the fact of possession at all emphatic or distinct, they use the whole word "*own*." Thus they will say "*Mosey house*." But if asked whose house that is, the answer is "*Mosey own*." "*Co' Molsy y'own*" was the

प्रकृत is the original of पकेलक, so कृत is the original of केरक (or कैलक); and कृत (केरक) has the same meaning as प्रकृत (or पकेलक), just as कर means the same as प्रकर *door*, and कार in the phrases इत्यस् कारम्, कथम् कारम्, &c., (cf. Siddhānta Kaumudi to Pan. 3. 4, 27, Vol. II, page 168) the same as प्रकार "manner."

But to return to the phonetic changes which केरक underwent, it is well known rule in Prakrit, that non-initial single mute consonants are elided (cf. *Prākṛita Prakāśa* II, 2.). Accordingly केर becomes केरञ्च, a form which occurs in several of the examples already quoted. When two vowels meet in consequence of such an elision of a consonant, they are often contracted, in Prakrit already (cf. *Pr. Prak.* IV. 1.), but still more in its descendant, the Gaurian. Hence केरञ्च becomes in the Gaurian केरै, and this again changes into केरा. Thus the Sanskrit घोटक, horse, is in Prakrit घोड़ञ्च, in the Gaurian घोड़ा (Alwari and Sindhi), or घोड़ा (High Hindi). On the change of the final ञ्च to अ, as well as the change of the feminine termination आ to ई in केरी, see some remarks below and in *Essay IV.*

From केरा (or केरी), केरी, केरे, may be derived immediately the modern forms का (or कौ), को, क, by another step of phonetic decay. The elision of a medial र, though not noted in the *Sūtras* of Vararuchi, occurs occasionally in the later Prakrit; e. g., पद, for परि, in

अकलिअवद्भमिअमसाई ।

नमह अणंगरदणो सोहणाई ॥ i. e.

Sanskrit, अकलितपरिरम्भविभ्रमाणि ।

नसतानङ्गरत्योसोहनाणि ॥

Karpūra Manjarī Sattaka, verse 2.

But in the Gaurian the elision of a medial single र is not without example. For instance, the conjunction पै, *but*, clearly stands for the Sanskrit परम्, which occurs in Hindi also, and more commonly as पर. Similarly, the Gauwari sign of the genitive कै has arisen from the other Gauwari and poetic form कर. Another Hindi word कर (करि) which, however, has a different origin and stands for the Prakrit करिअ (Sanskrit कृत्वा), also becomes not uncommonly कै, especially in the older poets like Kabir, e. g.,

कहो भाव कैसे कै जानी सत्य बचन कैसे कै मानो ॥ or

High Hindi, कहे अभिप्राय कैसे करि जानूँ सचो बात कैसे करि मानूँ ॥

There is no great difficulty, therefore, in deriving का, कौ, के, from केरा, केरी; केरे, still another derivation is possible which I shall presently give, and

odd reply made by a little girl to the question, whose child she was carrying. Co' is little; y euphonic."—I think also, it can be shown that the affix स्य, by means of which many Sanskrit genitives are formed, is nothing else but a possessive pronominal base, equivalent to the common possessive pronominal base स्व, meaning "own."

which is not open to this difficulty. Before, however, proceeding to the consideration of it, I will dispose of another genitive post-position which, there appears little doubt, is really derived from केश and thus medially from the Prakrit केशक, viz. the Bangálí genitive post-position एर, and the Bangálí and Oriya र.

In Bangálí, all adjectives which are derived through the Prakrit appear in the *crude base* (that is without the Prakrit endings ओ [masculine] or आ or ई [feminine] and anuswára [neuter]), and hence are alike in all genders and cases, e. g., कोट बालक, little boy, and कोट बालिका, little girl (cf. Shama Churn Sircár's Bangali Grammar, page 75, 2nd edition). Hence the Prakrit केशक or contracted केश, would in Bangálí become केश. Now this form केश occurs now and then in Tulsi Das, who, in his Ramáyan, has laid all the principal Gaurian languages, and Bangálí among them, under contribution. An instance of a verse containing it, has been already quoted. I have above referred to the Prakrit rule of eliding a medial single mute consonant. The term medial includes also the initial consonant of a word which forms the last part of a compound (cf. Pr. Prak. II, 2); e. g., Sanskrit सुपुरुषः becomes in Prakrit सुउरुषो; Sanskrit कुम्भकारः becomes in Pr. krit कुम्भशरो, in Gaurian कुम्हार; Sanskrit चर्मकारः becomes Prakrit चर्मशरो, Gaurian चमार. I have also shown that, though in Prakrit केशक is generally used *pleonastically*, so that its concomitant word is also in the genitive case, yet in some instances it is made to form a compound with its concomitant word which then drops its genitive inflexion. This latter usage seems to have become exclusively established in the Bangálí, and in using केश in composition with the word in the genitive case, the initial क of the former is elided regularly. Thus we arrive at एर. Take for instance the genitive of सन्तान, a child; it would be सन्तान केशक, this would change to सन्तानकेश, and this to सन्तानएर, or (by contraction of the two adjoining vowels) सन्तानेर, which is the present genitive in Bangálí. By analogy, the other Bangálí genitive post-position र, which it shares with the Oriya, is probably a curtailment of the genitive sign कर, still occurring in Tulsi Dás and in the Ganwári.

It has been already noticed that the Sanskrit equivalent for the Prakrit केशक is कृत. But कृत assumes various forms in Prakrit. Perhaps the most common, though not the most regular, form of it is कित् (where the change of कृ to इ takes place by Pr. Prak. I, 28, and that of त to द by Pr. Prak. II, 7), e. g.,

सुदु दे कित् ॥=Sanskrit सुदु ते कृतम् ॥

Or : अथैकित् विमुक्तेति ॥=Sanskrit अपहतम् विस्मरति ॥

Or : एवं कित् किं भोदि ॥=Sanskrit एनं कृते किं भवति ॥

Next comes the form कद्, formed regularly according to Pr. Prak. I, 27, and II, 7, e. g.,

पलिचालके कद्वि ॥=Sanskrit परिचारकः कृतोऽस्मि ॥

Or : सुद्धु मए कदं ॥=Sanskrit सुद्धु मया कृतम् ॥

The most regular form, though not so frequent, is कश्च with change of ऋ to अ by Pr. Prak. I, 28, and elision of त by Pr. Prak. II, 2., in both of which sūtras it is given among the examples. Another not unfrequent form is कड, (Pr. Prak. XI, 15), in which the त् of कृत under the influence of ऋ has changed to ड, a change not uncommon in Prākṛit, as in पडिमणे, for प्रतिमणः, (Pr. Prak. II, 8, 28.), वुड्डो for वृद्धः शिलु पडदि for शिरः पतति, (Mriecheh. Act II page 62). Examples of कड are—

श्लपलिवने कडे ॥=Sanskrit स्वरपरिदृष्टिः कृता ॥

अडे गये कडे ॥=Sanskrit अर्द्धगण्डः कृतः ॥ etc.

Another very rare form is कल, where the ल may be a substitution either for the ड of कड (by Pr. Prak. II, 23, as दालिसं for दाडिमम्, कालिन्ह for क्रीडासः, Ratnāwālī, Act I, page 21), or for the द of कद (by analogy of Pr. Prak. II, 12, as कलम्या for कदम्बः) : it occurs, *e. g.*, in कलेनिचए ॥=Sanskrit कृता निचय ॥. From the form कल probably sprang the form केल, which occurs only in the augmented shape केलक, by the not uncommon substitution of an ए for the first अ (cf. Pr. Prak. I, 5, as सेज्जा for शय्या, तेराहो for त्रयोदश, पेगन् for पर्थनम्, &c.). The most extraordinary transformation of कृत, however, is the rare one कुलु which occurs, *e. g.*, in अलेगयकुलु=Sanskrit अरं गण्डः कृतः (Mriecheh. Act II, page 63). From either कल or कड, by the easy change of the linguals or ल into र (cf. Pr. Prak. II, 30), arose a further form कर : unless it be considered itself the original of कल, which is equally possible ; or कर might also be derived direct from कद ; cf. Pr. Prak. II, 13, 14. The same relation as केक to कल, केरक bears to कर : and as कर is to कल, so केरक is to केलक. The form कर (as an indeclinable adjective like those in Bangālī) has been used, as already shown, in the vulgar and poetical Hindi, to express the genitive. And from it, as also explained already, probably the Bangālī and Oriyā genitive sign र is derived, by the elision of the consonant क and loss of the vowel अ through the contraction of the meeting vowels consequent upon that elision ; *e. g.*, घोड़ा कर = घोड़ाकर = घोड़ार.*

The other forms किद or कद or कश्च are, I think, the originals of the different modern Hindi post-positions का or कौ or को and their feminine की and inflected के. As the Prākṛit के-का becomes (by elision of क) केरअ, and this again in the Gaurian (by contraction of the meeting vowels) केरा or केरा, so the Prākṛit कदो becomes कश्च, and this in the Gaurian कौ or कौ or का. As regards this final अ of का which corresponds to the masculine ending आ of all adjectives which have come into the Hindi through the Prākṛit, it is every-

* Perhaps the possessive in Hindi मेरा, तेरा, तिहार, हमारा, तुम्हारा, &c., should be explained by means of this element (र for रI), the curtailment of कर (or केरा), thus तुम्हारा Sanskrit युष्मत् कृतः—Prākṛit तुम्ह केरका ; for the commonly received derivation of these pronouns from the Sanskrit possessiva मदीय, त्वदीय, युष्मदीय, &c., is not without difficulties.

where the substitute of the Prakrit masculine nominative ending **ओ**. Adjective bases in **अ** end in Sanskrit in the nominative singular masculine in **अः**, feminine **आ** or **ई**, plural **आः**. These terminations change in the Prakrit in **ओ**, **आ** or **ई**, and **आ**. In the Alwari dialect, as well as in the Sindhi and Naipali, these terminations are preserved unchanged. The genitive postpositions in Alwari and Naipali are, nominative singular masculine **को**, nominative plural masculine **का**, feminine **की**; in Sindhi resp. **जा**, **जा**, **जो**; similarly, in all three languages, **घोड़ा** is a horse, **घोड़ा** horses, **घोड़ी** mare, &c. The Brajhashá changes generally the Prakrit **ओ** into **ऐ**, and has therefore **कौ**, instead of **का**; similarly **कछौ**, for Prakrit **कहिओ** (Sanskrit **कथितः**). The High Hindi finally changes the harsher diphthongs **ओ** or **औ** into the more agreeable vowel **आ**, and hence has **का**, **कहा** for **को** or **कौ**, **कहिओ** or **कछौ**. From **को** (or **कौ** or **का**) the feminine **की** was formed, according to the universal rule of the Hindi of forming the feminine in **ई**, instead of the Sanskrit or Prakrit **आ**. The origin of the feminine **की** and the inflected form **के** will be explained afterwards (see Essay IV).

The form **किद्** perhaps has even a better claim than the form **कद्** to be considered the original of **का**, **की**, **के**. It is true that so far as I have searched the Prakrit dialogues of Sanskrit dramas, I have not discovered an instance of either **कदो** or **किदो** being used in that *pleonastic* manner in which **केरको** is employed. While **केरको** is frequently used in a determinative sense (as affix of the genitive), I have never found **कदो** or **किदो** so used, but always in a predicative sense (as a proper participle past passive). But besides the direct proofs to be adduced hereafter (showing that **किदो** is the original of **को**), the following reasons will show that not much importance can be attached to the circumstance. In the first place, that no instance of **किदो** or **कदो** as genitive affix is found, is merely matter of accident. For altogether the use of a Prakrit form of the Sanskrit participle **कृत** in this determinative sense, is confined to *one* play, the *Mrichchhakatī*; and even there it occurs only about fourteen times (in the form **केरक**). This use of **कृत** was evidently *slang*. But while other plays also introduce low and vulgar people, they do it only on rare occasions and even then put a more or less refined language into their mouth; on the other hand, the *Mrichchhakatī* introduces low people very extensively, and allows them to express themselves freely in their native vulgar jargon. This explains also the occurrence, in the *Mrichchhakatī*, of other grammatical forms besides **केरक**, which are found in no other play. We may safely conclude that since the use of a Prakrit form of **कृत** to determine the genitive is confined to one play and even there, on account of its vulgarity, is only exceptionally introduced, the manner of its use there must not be taken as a measure of its use in general among the people. Among them, **केरक** was employed, no doubt, much more frequently, and very probably other forms of **कृत** (as **कद्**, **किद्**, &c.) also, which were too vulgar to be admit-

ted at all into any play. There is nothing surprising in the fact that, among only about fourteen instances of केरक, the form किद् or कद् should never occur, seeing that the latter was probably the more vulgar expression of the two. And here I may call attention to the oft-observed fact that what had been once vulgar or slang phrases, or grammatical forms, during the classical period of a language, generally becomes the material out of which the language after its decay reconstructs itself. This law is well illustrated by the Romance languages. "The sources of Italian are not to be found in the classical Literature of Rome, but in the popular dialects of Italy. Hindústānī is not the daughter of Sanskrit, as we find it in the Vedas, or in the later literature of the Brāhmans; it is a branch of the living speech of India, springing from the same stem from which Sanskrit sprang, when it first assumed its literary independence."* (2.) Moreover, there is direct proof that किदे and कदे were used in a determinative sense. In Sanskrit, कृते, the locative singular of कृत, is sometimes employed to express the dative. Even there it has nearly lost its originally predicative meaning, and has come to be regarded almost like a mere case-affix. But in the Prakrit and Gaurian, कृते as well as other similar Sanskrit words, *e. g.*, अर्थे (Marāṭhī अर्थी), सकाशे (Bangālī काई, Hindī कहें), have become mere case—signs of the dative. Now कृते is rendered in the Prakrit promiscuously by केरके (or केरक'), or by किदे, or by कद्. Examples of केरक are the following—

हञ्जे तस्स केरकं ति कथं तुमं जाणामि ॥ *i. e.*

Skr. हे चेष्टि तस्य कृते इति कथं त्वं जानामि ॥ or

High Hindī: हे चेष्टि कि उस के लिये (आया है) यह तू कैसे जानती है ॥

Or: अज्जर अत्तकेरकं वि ण जाणामि ॥ *i. e.*

Skr. आर्य्य आत्मनः कृतेऽपि न जानामि ॥ or

High Hindī: हे आर्य्या कि अपने लिये (आया है) यह भी मैं नहीं जानती हूँ ।
Mrichchhakati.

Or: एसे कस्स केरके पवचणे ति ॥ *i. e.*

Skr. एष कस्य कृते प्रवचण इति ॥ or

High Hindī: यह गाड़ी किस के लिये है ॥

Or: एसे राजशालसंस्थानकेलके पवचणे ति ॥ *i. e.*

Skr. एष राजशालसंस्थानस्य कृते प्रवचण इति ॥ or

High Hindī: यह गाड़ी राजा के साला संस्थान के लिये है ॥

Ditto, Act. VI. page, 186.

Examples of किदे are—

कस्य किदे अहं आचदा ॥ *i. e.*

* Max Müller, Lectures on the Science of Language, Lect. II., page 67. The greater part of that lecture (pp. 50 to 80) is devoted to this subject of what M. M. calls "dialectic regeneration."

Skr. कस्य हतेचरम् आगता ॥ or

High Hindí: किस के लिये मैं आयी हूँ ॥

Ratnávalí, Act II, page 57.

Or : कीमं तुमं सिविण् अदंसणसेत्तकस्सुकिदे सन्तप्पमि ॥ i. e.

Skr. कस्मात् त्वं स्वप्नदर्शनमात्रस्य हते.... सन्तप्यसे ॥ or

High Hindí: क्यों तू केवल स्वप्न देखने के लिये ... पश्चात्ताप करती है ॥

Venisamhára, Act II. page. 35.

An example of कदे is the following—

कथं मम मन्दभाङ्गीण कदे अञ्जवालुदरे वावादीअदि ॥ i. e.

Skr. कथं मम मन्दभागिन्याः कृते आर्यचारुदत्तो व्यापाद्यते ॥ or

High Hindí: कैसे मुझ अभागो के लिये आर्यचारुदत्त मारा जाता है ॥

Mrichhakaṭī, Act X. page 323.

It is more than probable then, that if किदे, or कदे, was used beside केरक, to express the dative, किदे or कदे was also employed beside केरको, to express the genitive. And I think it not impossible, that a more careful and extensive examination of Prākṛit and the earliest Gaurian literature, might bring to light instances of the use of किदे or कदे as affixes of the genitive.

But to proceed with the consideration of किदे. By the usual elision of the *medial* mute consonant, the form कियो would arise. This is, indeed, the usual form in which the participle कृत appears in the earlier Hindí poets (especially Súra Dás), where it is written कियो, with a slight accommodation to the pronunciation to avoid the hiatus. Generally, however, in such cases the vowel इ before यो is changed to the corresponding semivowel य; e. g., Sanskrit रहितः = Prakrit रहिथो = Hindí रह्यो; Sanskrit कथितः = Prakrit कहिथो = Hindí कह्यो, &c., and in the Brajभाषा रह्यो, कह्यो, etc. Accordingly, कियो would become क्यो, and in the Braj Bhāṣā क्यो. The reason why it is changed to कियो (or कियै) is simply euphonism, an initial double consonant being difficult to pronounce. But when in other words (रह्यो, कह्यो) the double consonant would be medial and hence divisible between the two enclosing syllables, it is not avoided; and for the same reason the word कियो itself, when it is compounded with a prefix, is spelt क्यो in the Naipali; e. g., जब उ बाहिर निस्क्यो = Hindí जब बह बाहिर निकला (= S. निःकृतः). This is but the application of a well known Sanskrit Sandhi rule, according to which, e. g., रि + यति = रियति; गु + यति = गुवति, but शिश्नो + ए = शिश्ये, भानु + यो = भान्वा: (cf. Siddh. Kaum. to Pan. 6, 4, 77, 64, 82, page 118.) Now when कियो is used to express the genitive, it is no more an independent word, but has sunk down to the position of an affix, and forms a compound with its concomitant word. Hence, क्य would have a medial position and, therefore, would not be avoided. Hence कियो, when used as a sort of genitive affix, would be contracted into क्यो (or क्यै).

Lastly क्यो would, for reasons of euphony, be contracted into को (or कौ or का); just as the harsher forms रह्यो or रह्यौ, कह्यो or कह्यौ, &c., of the Braj

Bhāshā are contracted in the High Hindī into the more euphonic रह्ता, कहा, &c.. The following scheme will make the similarity still more manifest to the eye—

Sanskrit.	Prākṛit.	Br. Bhāṣā.	Hindī.	
(कथितः), (क-)थितः	== (क-)त्तिदो	== (क-)त्तिओ	== (क-)त्थो	== (क-)हा
(रक्षितः), (र-)क्षितः	== (र-)त्तिदो	== (र-)त्तिओ	== (र-)त्थो	== (र-)हा
(मारितः), (मा-)रितः	== (मा-)रिदो	== (मा-)रिओ	== (मा-)र्यो	== (मा-)रा
(लगितः), (ल-)गितः	== (ल-)ग्गिदो	== (ल-)ग्गिओ	== (ल-)ग्यो	== (ल-)गा
(कृतः), (—)कितः	== (—)किदो	== (—)किओ	== (—)क्यो	== (—)का

A still more exact parallel, than by these examples, is afforded by the Hindī या (feminine यी, plural ये), the past tense of the auxiliary verb होना, to be. For the original of या is स्थितः, the Sanskrit past participle of the verb स्था, to stand. The initial स् is dropped, as usual in Prākrit; likewise the medial त्; thus we arrive at थियो; and this may change either to थियो, which would be exactly parallel to the Braj Bhāshā कियो, or to य्यो, which would be exactly parallel to the form क्यो, assumed by me as the *immediate* original of को (का). Now both थियो and य्यो occur in the Naipālī, and are there the simultaneous equivalents of the Hindī या; *e g.*,

उसका नाउँ अलीसबा थियो । *i. e.*

High Hindī : उसका नाम अलीसबा था । St. Luke i, 5.

Again : ई दुवै विधि मा निर्दोष थ्या । *i. e.*

High Hindī : ये दोनों विधि में निर्दोष थे । St. Luke i, 6.

Again : ई दुवै धेर वर्ष का थिया । *i. e.*

High Hindī : ये दोनों बहुत वर्ष के थे । St. Luke i, 7.

In the case of या, therefore, we can still follow its descent, step by step, from the Sanskrit स्थितः, through थिदो, थिओ, थियो, य्यो, to था; while in the case of का unfortunately some of the links have been lost. But that को, or का, is really a direct descendant of the Sanskrit कृतः, just as था of स्थितः, is even more remarkably proved by the Naipālī; for in one case it actually makes use of को (feminine की, plural का) as a substitute of कृतः. The Naipālī, namely, possesses two forms of the past participle passive; one is the ordinary form, which it shares with all other Gaurian languages; the other is a very peculiar *pleonastic* form, which I believe only one other Gaurian language, *viz.*, the Marāṭhī, possesses. The difference between those two forms appears to be this, that the participle takes the common form, whenever it is used *actively* to denote the past tense active, and the *pleonastic* form whenever it is used *passively* as a participial adjective. The *pleonastic* form is made by superadding the past participle कृतः, contracted to को, to the common form of the past participle passive, and of the two participles, thus compounded, the latter cannot be inflected, whereas the former (*i. e.*, को) takes the inflexions, and agrees with the qualified noun in gender, number, and case,

(*i. e.*, masculine को, feminine को, plural and oblique का); *e. g.*, the past participle passive of लेखना, to write, used to form the perfect tense *active*, is लेख्यो (*i. e.*, Sans. लिखितः); but with the proper *passive* sense, it is लेख्या को (*i. e.* Sanskrit लिखितः कृतः, or Hindi लिखा हुआ or गया), thus "the Gospel written by Luke" is लूकले लेख्या को शुभसमाचार (*i. e.* Sanskrit लूकेन लिखितः कृतः शुभसमाचारः or Hindi : लूकसे लिखा हुआ शुभसमाचार); but "Luke wrote a Gospel" is लूकले लेख्या शुभसमाचार (*i. e.*, Sanskrit लूकेन लिखितः शुभसमाचारः, or Hindi लूक ने लिखा शुभसमाचार). A few other examples are: कोहि सहर नासरा भन्या का मा परसेखर वाठ दूत पठाया को थियो *i. e.*, High Hindi कोई नगर नासरा कहे ऊए में प० वाठ दूत भेजा गया था (Lit. Sanskrit कस्यापि नगरस्य नासरा भणितस्य कृतस्य सस्य परसेखरमसोपात दूतः प्रस्थापितः कृतः स्थितः) St. Luke i, 26, 27. Again, उ एक मानिन भित वाग्दत्त भया की थिई, *i. e.*, High Hindi वह एक मनुष्य के साथ वाग्दत्त भयो गयी थी (or Sanskrit सा.....भता कृता स्थिता) St. Luke i, 27. Again, तेरे बिनो सुन्या का ह *i. e.*, High Hindi तेरा बिनय सुना गया है (or Sanskrit श्रुतः कृतोऽस्ति) St. Luke i, 14. Again, उ वांझा भन्या को को या बैठा सहिना भयो *i. e.*, High Hindi वह बांझ कहाँ ऊई का बड़ा सहिना हुआ. In this last example, the participle को and the genitive affix को are side by side.*

Whichever be thought the more probable derivation of का, either from कद् or किद्—and this can only be decided after a more thorough examination of the earliest Gaurian literature—I hope, I have succeeded in proving so much beyond doubt, that the Sanskrit participle कृत is in one form or the other the original of the genitive post-positions.

There remains briefly to consider the post-positions in the other Gaurian languages. In the case of most of them my remarks are not meant to be

* A very similar, though not quite so parallel case is that of भा, a past participle of हाना, to be, which still occurs in the Ganwari, and is also met with now and then in Tulsi Dās. It stands for the High Hindi हुआ (Sanskrit भूतः), and the Low Hindi भवा, or भया. It occurs, for instance, in the following verse of Tulsi Dās,

अब सोहिं भा भरोस हनुमन्ता ॥ *i. e.*

High Hindi: अब मुझे हुआ भरोसा है हनुमान् ॥

Sundar kând.

भा is a curtailment of the Low Hindi भवा or भया, which are both probably derived from a Prakrit भविद्दा (for Sanskrit भूतः). From भविद्दा, by the elision of द्, would come भाविथा, भया, भवा, and from the same, by the elision of both द् and व, would come भद्दा = भया = भवा. Another parallel case, I believe, we have in the syllable गा (feminine गो, plural गे), which forms the Hindi future tense; *e. g.*, होगा, he will be. For it stands probably for गया, the Hindi past participle of जाना, to go; and गया itself is connected with the Sanskrit गतः, and Prakrit गया or (with insertion of an euphonic य्) गया. Compare also पा in the Low Hindi phrase पा जाना, to be found, for पाया जाना, and का, the Low Hindi for क्या, what?

more than suggestions of their probable origin, founded partly on the fact of the common origin of all Gaurian languages, partly on Prākṛit analogies.

In the Marāṭhī genitive post-positions चा, चौ, च, a simple transformation of the guttural क् of का, को, के into a palatal च has taken place. For the rest they must be derived from the Sanskrit क्त in the same manner as का, को, के. There is only one other instance known to me in Marāṭhī of such a change of gutturals and palatals: it is that of the Sanskrit किरातः barbarian into the Mahārāshṭrī चिलादे which is the subject of a special rule in the Prākṛit Prakāsa (II. 33.) But the change is physiologically very easy (cf. Max Müller, *Science of Languages* Lect. III, page, 155 vol. 2nd), and by no means uncommon in the Aryan languages in general (cf. Bopp, *Comp. Gram.* § 14 page 25).*

The origin of the Panjābī, Sindhī and Gujarātī post-positions I explain alike, in a manner similar to that in which I have explained the Bangālī and Oriyā post-positions र and एर; viz. that they have originated from a Prākṛit form of क्त by the elision of the initial consonant क and contraction (by *Sandhi*) of the two adjoining vowels.

The original of the Panjābī post-positions दा, दी, दे is the form कदा or किदे; probably the latter.† Take for instance the genitive of घोड़ा horse. It may be assumed to have been originally घोड़े किदे‡. Here the original

* I had written the above remarks when I received a copy of the Student's Manual of Marāṭhī Grammar. In the appendix on the grammatical forms which occur in *old Marāṭhī poetry*, a few forms are given which confirm my theory in a remarkable way. The old form of the masculine चा and the neuter चे is there (page 138) stated to be resp. चिया and चिये. Now चिया represents a Prākṛit form चियो and is the very form which, a few pages back, I postulated as the immediate original of the Hindi का (taking क् and च् to be interchangeable letters) and about which I expressed a hope that a more thorough examination of the oldest Gaurian literature might bring to light traces of it. I, there, derived का (or चा) thus: Sanskrit क्तः, Prākṛit किदे = कियो (or चियो) = either कियो (or चियो) or को (or दो) = का (or चा).—The derivation of चा (in the same grammar page 132) from the Sanskrit genitive affix स्य is untenable. 1stly, because even if स्य could be the original of दा, it certainly could not be so of the older form चियो. 2ndly. The Sanskrit स्य is unchangeable, while चा is capable of forming case, number, and gender. 3rdly. Against the Sanskrit derivative affix त्य as well as against the inflexional affix स्य all those objections lie which I have pointed out with reference to the derivation of the Hindi का from the Sanskrit affix क or कीय.

† The Panjābī dictionary of the Lodiānā Mission gives a form दिआँ, a preposition or genitive particle. If this can be trusted, it would seem to indicate that the initial द् of the Panjābī post-positions is a modification of the original क् of किदे. See on this interchange of the guttural and dental class, Bopp's *Comparative Grammar*, § 401.

‡ I must reserve the explanation of the inflected form घोड़े for another paper.

meaning of किंदो was no more felt; it had become like a mere affix and had assumed an *enclitic* position, forming *one* word with घोड़े. Hence, as in compound words, the (now medial) consonant क was elided, and the two adjoining vowels ए + इ contracted (by dropping इ); thus we have घोड़े इदो = घोड़े दो. Finally as in High Hindi the harsh diphthong औ was changed to the more agreeable vowel आ; thus घोड़े दा. The process here assumed is well illustrated by the origin of the interrogative pronoun कौन who. In Prākṛit the interrogative pronoun को (= Sanskrit कः) has almost invariably appended to it, the *enclitic* पुनर्; thus को पुनर्; here the consonant प is always elided; thus को उण; in the Gaurian again the two adjoining vowels औ + उ are contracted (by dropping उ), thus कौन.*

The Sindhi post-positions जा, जो, ज, जा may have originated from the form कियो (= कियो = किंदो), by exactly the same process as explained above in the case of दा; thus घोड़े कियो = घोड़े दियो = घोड़े दो. Finally the initial semivowel य of यो would change, according to a general rule of the Prākṛit (P. P. II, 31) and Gaurian, into the palatal consonant ज; thus घोड़े जा.†

The Gujarātī post-positions ना (नी, नुं, etc.) I am inclined to derive from an obsolete Prākṛit form of क्त, *viz.* कियो or कुयो in the same way as the Panjābī दा from किंदो, or the Sindhi जा from कियो. That such a Prākṛit form must have once existed, is clearly proved by the Hindi. In poetry, an old Hindi form कान्हा or कीना often occurs equivalent to क्त: made or done. Two other old Hindi past participial forms, exactly analogous to them, also occur in poetry, *viz.* दीन्हा or दीना given (= Sanskrit दत्तः) and लोन्हा or लाना, taken (= Sanskrit लब्धः).‡ Now the derivation of द, ना is well assured

Here I will only say that I consider the termination ए to be a modification of the Sanskrit genitive termination अस्म्य (of bases in अ), which in Prākṛit becomes अस्स (or आस or आह) or से. The curtailment of किंदो or कंदो into दो must be supposed to have taken place contemporaneously with the modification of the Prākṛit termination आस or आह or से into the Gaurian ए (Hindi, Panjābī, Sindhi) or आ (Mar. Gujar.).

* A Prākṛit lingual ण generally changes into the dental न in Hindi. In the Alwar dialect the pronoun is still कौन; in the Gaurwārī and in Hindi poetry (e. g. of Chand Bardai) it is कवन; compare in Marāṭhī चवथ fourth for the Prākṛit चउथ. It may be noticed also that the vowels इ and उ which are elided, are preceded by their own corresponding diphthongs ए and औ.

† The Sindhi post-positions admit, however, also of a different explanation. Their initial ज् might be merely a softening of the initial च् which we have in the Marāṭhī. As a somewhat parallel case we may compare the Nipālī भौ (they are), to which corresponds in the Low Hindi of Alwar भै and in High Hindi है (i. e. Sanskrit सन्ति).

‡ Of these pairs those containing the ह are later and occur generally in Tulsi

According to the *Prākṛit Prakāśa* VIII, 62, the participial past passive of the root दा to give is in *Prākṛit* दिष (for Sanskrit दत्त) and from दिष by a regular process of phonetic modification, which I shall explain later on, the form दीन* originated. By analogy it follows that the other two forms काना and लीना must also be derived from original *Prākṛit* forms किष and लिष (of the roots कृ and भृ). It is true that neither किष nor लिष are supported by any of Vararuchi's *Sūtras*, nor by the *Prākṛit* of the plays founded upon those *Sūtras*. But as the process of phonetic change was certainly not stopped by Vararuchi's *Sūtras*, the phase of *Prākṛit* exhibited in his *Sūtras* cannot be taken as a measure of what *Prākṛit* may have been at a much later period. There is not the least difficulty, therefore, in assuming that the *Prākṛit* of later times and perhaps among the vulgar, contained many forms which have not found admittance in Vararuchi's *Sūtras* or in dramatic *Prākṛit*. Among those later or more vulgar forms किष and लिष must have been,† Their existence is necessary to account for the existence of the

Dās. The others, without ह् are the more original ones and occur for example in Kabīr Chand; e. g.,

जहि मुनीश जो आयसु दीन्हा ।

सो जनु काज प्रथम तहि कोन्हा ॥ i. e.

High Hindī: जिस को मुनीश जो आदेश दिया ।

सो कार्य माना पहले उस ने किया ॥

Tulsi Dās Ramāyan, Ajudhya Kānd.

Again: जारि वारि कै सुपना दीना ।

कहै आई औतार हि लीना ॥ i. e.

High Hindī: जला करके सुपना दिया ।

कहता है आके औतार को लिया ॥

Kabīr, Rekhtās.

Again: गज चरम आसन कोन ।

पढी जमन वेद नवोन ॥ i. e.

High Hindī: हाथों का चर्म का आसन किया ।

य.वनों का नाया वेद पढ़ने को ॥

Pr. Rāj Rāy., I, 11.

Again: कारन कवन भय मुनि कोनों ।

रोकि पबलि गृथै कहा लोगों ॥ i. e.

High Hindī: क्या कारण कि मुनि का भय किया ।

मार्ग रोकने का ग्रंथ क्या लिया ॥

Pr. Rāj Rāy., I, 18.

* The dental न for original ण according to general Hindī usage.

† In P. P. VIII, 13, it is stated the root कृ or कर may change into कुण; e. g. कुणद he does for करद (= Sanskrit करोति). From कुण a past. part. passive कृष may be derived and it is not improbable, that कृष might change into किष by the analogy of दिष just as e. g. पुरुष man changes into पुरिस; cf. P. P. I, 23.

forms कौना and लौना which certainly do exist. From an original Prākṛit किक्षे then, through the intermediate modification कीने, I think the Gujarātī genitive post-positions ना, &c., may be derived.

Having thus explained the derivation of the various Gaurian post-positions of the genitive, I now proceed to state another important evidence in support of my theory. I have shown that the word केरक was used in two different ways in Prākṛit to express the genitive, viz., 1st, as a *mere affix*, in which case it was *compounded* with the word which was to be put into the genitive case; 2nd, as a *pleonastic* insertion, in which case the word which was to be put into the genitive case, retained its *organic* genitive inflexion. Now I have tried to prove that the Bangālī post-positions एर and र् and the Oriya post-position र are derived from the Prākṛit केरक employed in the former manner. On the other hand the Hindi post-position केरा (केरो, केरे) are derived from the same Prākṛit करक employed in the second manner and the Hindī post position का (को, के) as well as the post-positions of all Gaurian languages of the Hindī class (*i. e.* Naipālī, Marāṭhī, Gujarātī, Sindhī, Panjabī, but exclusive of Bangālī and Oriya) are derived from the Prākṛit form किद् (किक्ष respectively), also employed in the *second* manner. This accounts why the initial क् was lost in Bangālī and Oriya, while it was retained in Hindī, Naipālī and Marāṭhī. It is true क् was dropped (if my derivation be true) in the Panjabī, Sindhī and Gujarātī; but this is accounted for by the circumstance that though the words किदे and किक्षे remained independent words, yet being only *pleonastic*, they became *enclitic*, and hence liable to *phonetic* corruption in the initial letters by contact with the principle word, on which they leant. However the main point to which I wished to call attention is this, that if my theory of explanation of the genitive post-positions of the Hindī class of the Gaurian languages is true, it may be expected that traces of their being a *pleonastic* insertion, and of the existence of an *organic* genitive of the inflected word will have remained. A few such traces, I think, I can prove to exist, and considering the extent to which *phonetic* decay has gone in the modern languages of India, I think they are sufficiently distinct and remarkable.

In Hindi poetry, such combinations as तेहि केरो, तेहि को, ताहि को (all = उसका or तिसका) or केहि केरो (= किस का) &c., are not uncommon; *e. g.*,

खर प्रभु अंग अंग कवि कहां पाया केहि केरे ॥ *i. e.*

High Hindī: हे खरप्रभु किस के अंगों में शोभा कहां पायी गयी ॥

Sūra Dās, Sūrsāgar, Rāgvilāsa.

Or: बाघों आज तेहि को डारे ॥ *i. e.*

High Hindī: मैं बाघू आज तुम को डे लड़के ॥

Ibidem, 162.

Or: ताही के भये डाढी खोरा ताही के भये चोरा ॥ *i. e.*

High Hindí: तिस के ऊए थाली कटोरा तिस के ऊए चोर ॥

Kabir's Rekhtás.

Now these forms तेहि or ताहि, केहि or काहि, जेहि or जाहि, तेहि, मोहि, &c., are nothing but phonetic corruptions of the Sanskrit genitives तस्य, कस्य, यस्य, &c. No doubt when standing by themselves they are commonly used to express the *dative* case and even any other case (ablative, instrumental, locative); but that is owing to the fact (i) that the *dative* case has disappeared altogether from the Prákrit and the Gaurian, and has been substituted by the genitive and (ii) that in poetry all case-signs (or post-positions) are generally omitted. But instances are not wanting where those forms are used even by themselves in the sense of the genitive; *e. g.*,

जाहि शस्य रूपी नेत्र नाहीं सो आंधरो हे ॥ *i. e.*

High Hindí: जिस का शस्य रूपी नेत्र नहीं सो आंधा हे ॥

Rājñiti, page 3.

Or: प्रभु पयात जाना नैदेही ।

फरके वाम अंग शुभ तेहो ॥ *i. e.*

High Hindí: प्रभु को यात्रा जानी सीता ने ।

फरके शुभ बाँये अंग उसके ॥

Tulsí Dás Ramáyan, Sundarkāṇḍ.

2. In the High Hindí the interrogative pronoun कौन forms its genitive किसका, the relative जो forms जिसका, the demonstrative सो forms तिसका, वह forms उसका, यह forms इसका. These forms किस, जिस, तिस, उस, इस have never been explained. The fact, however, is that they are by themselves already full genitives so that किसका, जिस का, &c., are in reality double or *pleonastic* genitives. In Prákrit there are two forms of the base of these pronouns, one ending in च, the other in इ (*viz.* क and कि, ज and जि, त and ति of which all इ bases, with the solitary exception of किस् *what* have been lost in Sanskrit). The bases कि, जि, ति, are in the Prákrit, as we know it now, restricted generally to the feminine; but that originally it was not so, is proved by the fact that in the masculine the forms किणा, जिणा, तिणा of the instrumental case occur as alternatives besides केण, जेण, तेण. Now the genitive of the masculine bases कि, जि, ति is किस्स, जिस्स, तिस्स (feminine किस्सा, जिस्सा, तिस्सा; for the Sanskrit कस्य, जस्य तस्य; feminine कस्या: etc. by the common rule of the Prákrit of assimilating dissimilar compound consonants, cf. P. P. III, 2.) In the modern dialects there is a general rule, that where the Sanskrit has two dissimilar consonants adjoining and the Prákrit turns these into two

similar consonants, the Gaurian elides one of the latter and lengthens the preceding vowel.* The following examples will illustrate this rule :

Sanskrit.	Prākrit.	Gaurian.	Sanskrit.	Prākrit	Gaurian.
कर्म	कम्म	काम	वार्त्ता	वत्ता	वात
कर्ण	कण	कान	अग्ने	अग्गे	आगे
कार्य	कज्ज	काज	अय्य	अज्ज	आज
अष्ट	अड्ड	आठ	अग्नि	अग्गि	आग
हस्त	हत्थ	हाथ	शुक्ल	सुक्ख	सुख
फाल्गुन	फग्गुन	फागुन	दुग्धा	दुद्ध	दूध
अत्मा	अप्पा	आप	etc.	etc.	etc.

But there are exceptions to this rule. One of the most common of these is *सव* all from Prākrit *सव्व* and Sanskrit *सर्व*.† The genitive *किस्सु*, *जिस्सु*, *तिस्सु* &c., are also exceptional and become in Hindi *किस*, *जिस*, *तिस*, &c. It follows, therefore, that the forms *किसका* etc. are *pleonastic* genitives. Rendered in Prākrit they would be *किस्सु* *कैदा* (or *किस्सु* *कैको*), etc., with which may be compared the genitive *कस्सु* *केरकं* quoted above on page 23.

3. In most Gaurian languages the termination of the noun in inflexion, *i. e.* when followed by post-positions, undergoes some change, generally into *ए* or *आ*; *e. g.*, Hindi घाड़ा genitive घाड़े का; Marāṭhī देव genitive देवाचा. These inflexional forms, I believe, to be simply modifications of the old organic genitives of the Sanskrit. I must content myself, however, here with this simple statement, and reserve the substantiation of it to a future paper on the inflexional bases of nouns.

ESSAY III.

On the Inflexional Base of Nouns.

In the former essay I promised a paper on the inflexional base of Gaurian nouns. The present essay will be devoted to this subject, the discussion of which, it seems best to insert here, as it offers an important confirmation of the theory set forth in the former essay, and a foundation for the treatment of the other inflexional post-positions in the subsequent essays.

In most Gaurian languages, there are classes of nouns which exhibit a different form when placed in connexion with post-positions (*i. e.* in all oblique cases) from that which they have when they stand by themselves (*i. e.* in the nominative case). The former form I shall call the *oblique form*; it is identical with what is often called the inflexional base. The

* Traces of this law are seen already in Prākrit, *e. g.*, Sanskrit कण्य becomes in Prākrit कम्म or काम see P. P. VI, 5; or Sanskrit दीर्घ, Prākrit दिग्घं or दीर्घं; Sanskrit ईश्वरः, Prākrit ईस्सुरो or ईसुरो; Sanskrit रात्रि, Prākrit राती or रादो or राई; see P. P. III, 58.

† Also सच, true, from Prākrit सच्च and Sanskrit सत्य; but in Naipālī regularly साच.

form of the noun in the nominative case I shall distinguish as the *direct form*.

In the present essay these *forms* of the noun in the plural will be altogether set aside, as in some Gaurian languages they are of a nature, altogether different from that of these *forms* of the noun in the singular. For the present I must assume this; the proof will be given afterwards in another essay. But it will greatly simplify the enquiry to confine our attention for the present to the singular.

In the Hindi only one class of nouns possesses an *oblique form* in the singular; *viz.*, all *masculine* nouns the *direct form* of which ends in such an *आ*, as is a modification of the Prākṛit nominative sing. masculine termination *आ*. The *oblique form* differs from the *direct form* in changing the termination *आ* to *ए*; *e. g.*, nominative घाड़ा horse, genitive घोड़े का; बड़ा large, बड़े का &c. The above definition implies that all those nouns have passed into the Hindi from the Prākṛit and, therefore, excludes all such nouns ending in *आ* as have been transferred to the Hindi direct from the Sānskrit or Arabic; *e. g.*, राजा king, पिता father, देवता God, मुन्ना priest, खादा God, &c. All other nouns, whether masculine or feminine, have no *oblique form* differing from the *direct form*; *e. g.*, nominative, पिता father, genitive पिता का; जल water, genitive जल का; साली gardener, genitive साली का; साधु devotee, gen. साधु का; पुत्री daughter, genitive पुत्री का; बात (fem.) word, gen. बात का, &c.

The Panjābī agrees with the Hindi in every particular; *e. g.*, nominative मंडा boy, gen. मंडे दा; but आत्मा soul, gen. आत्मा दा; मनुख man, gen. मनुखे दा; पाली herdsman, gen. पाली दा; पिउ father, gen. पिउ दा; काँउ crow, gen. काँउ दा; बला calamity, gen. बला दा; माँउ mother, gen. माँउ दा; पो daughter, gen. पो दा. To the masc. nouns in *आ* must be counted also those terminating in *आँ*; *e. g.*, बनोआँ shopkeeper, gen. बनिएँ दा. (See Panjābī Grammar of the American Mission in Lodīānā).

The Sindhī follows the Hindi and Panjābī with this qualification, that it retains the Prākṛit termination *आ*, and that, therefore, to the Hindi and Panjābī class of nouns in *आ* correspond in Sindhī the nouns ending in *आ*. The *oblique form* changes the terminations *आ* of the *direct form* into *ए*, as in Hindi and Panjābī; *e. g.*, nominative घोड़ा horse, gen. घोड़े जो; but मर्ध man, gen. मर्मे जो; जाल woman, gen. जाल जा; मलह word, gen. मलह जो; घोड़ी mare, gen. घोड़ी जो; मानी bread, gen. मानी जो &c. (See W. H. Wathen's Sindhī Grammar).

The Naipdi and Gujarāṭī again agree with the Sindhī, with this exception that they change the termination *आ* of the *direct form* into *आ* of the *oblique form* instead of *ए*. Similarly the Gujarāṭī neuter nouns in *ए* change their final in the *oblique form* into *आँ*; *e. g.*,

Naipáli ; nominative	कुरा	word, gen.	कुरा का ;
but	राजा	king	राजा को
	सन्तान	son	सन्तान का
	पट्टि	course	पट्टि का
	प्रभु	lord	प्रभु को

(Examples from St. Luke's Gospel.)

Gujarátí ; nominative	masc. धंधा	business	gen. धंधा ना
	neut. सोनुं	gold	सोनां ने ;
but	masc. देव	God	देव ना
	राजा	king	राजा ना
	माचो	shoe maker	माचो ना
	लाडु	sweetmeat	लाडु ने
	fem. बाला	girl	बाला ने
	पाथी	book	पाथी ने
	सासु	mother-in-law	सासु ने
	हरडे	yellow myr.	हरड ने
	रबै	churningstaff	रबै ने
	घा	iguana	घा ने
	neut. जंगल	thicket	जंगल ने
	पानी	water	पानी ना

(See Grammar of Shapurji Edalji.)

It is manifest that all these Gaurian languages allow an *oblique form* only to such nouns as have passed *directly* or *immediately* from the Prakrit into the Gaurian, which form part, as it were, of the original stock of vocables with which the Gaurian started on its way of development, when it first began to become a distinct language beside Prakrit. These nouns (*viz.* those which admit of an *oblique form*) I shall always in future distinguish briefly as the *Prákrític elements* of the Gaurian.

Besides these *Prákrític* elements of the Gaurian, there is another class of nouns in the above-mentioned languages (*viz.* Hindí, Panjábi, Sindhí, Gujarátí, Naipáli, which I shall in future call for brevity's sake the *Hindí-class Gaurian*), the nature of which is unmistakable to any one acquainted with the phonetic peculiarities of Prakrit and Sanskrit. They are purely *Sanskrit*. As the Prakrit tolerates no compound consonant in the beginning, nor a *dissimilar* compound consonant in the middle of a word ; further as it generally either changes a medial surd mute consonant to the corresponding sonant one, or elides it altogether ; and as it generally changes an aspirate mute consonant to the simple aspirate ह, it follows, that, 1, *every* Gaurian word containing a compound consonant in the beginning or a dissimilar compound consonant in the middle must be *Sanskritic* (barring of course all *foreign* words) ; 2. *Most* Gaurian words containing a medial surd mute or aspirate are *Sanskritic*, *e. g.*, wrath is in Hindí both क्रोध and

कोह; but the latter is *Prākritic*, whereas the former is purely Sanskritic; again कर्म or कार्य work are Sanskritic, but काम or काज are *Prākritic*; again लिखित written is Sanskritic, but लिखा or लिखा is *Prakritic*, &c. &c.* All such nouns I shall call the *Sanskritic elements* of the Gaurian. It needs no proof to show that this *Sanskritic* element is the most modern part of the Gaurian; modern, that is, not absolutely, but relatively to the other elements; for the presence of some of the *Sanskritic* element dates from some centuries. But a very slight examination of the Hindi literature will show that this *Sanskritic* element is least present in its oldest specimens, and that it increases in proportion as the date of the literature approaches our own times. In the High Hindi it preponderates very largely, and, as I have already remarked in the introductory essay, its introduction is still progressing.

Now what happens when we see a Sanskrit word naturalised, as it were, in the Gaurian (High Hindi)? It is simply taken in the form of the Sanskrit nominative sing. In this form it remains stereotyped in the Gaurian and serves as the Gaurian *Inflectional base* for all cases, the nominative, as well as the oblique ones; e. g., wise is in Hindi बुद्धिमान्. gen. बुद्धिमान् का. This inflectional base बुद्धिमान् is nothing but the nominative sing. of the Sanskrit word (or rather *base*) बुद्धिसत्. Again soul is in Hindi आत्मा (with gen. आत्मा कः) which is merely the Sanskrit nominative sing. of the base आत्मन्. The same word occurs in Hindi also in the *Prākritic* form आप (for Prakr. अप्पा) in the sense of an honorific term of address. It follows from this as the distinctive principle of the (Hindi-class) Gaurian,† that they have 1. lost the power of forming organic inflexions of a noun (as the Sanskrit and *Prākrit* do.) 2. That they leave their inflectional bases unchanged and indicate their inflexion by post-positions, and 3. that they use as their bases the nouns in the *nominative singular* belonging to a former and now fossil state of the language (*viz.*, to Sanskrit or, as we shall presently see, to *Prākrit*); having thus become unconscious of the already inflected nature of its nouns.

It has been now shown that the *Prākritic* element of the (Hindi-class) Gaurian contains all those nouns which admit of an *oblique form*, and

* These are only a few of the more broad and general criteria. There are others also; e. g., in the High Hindi (not in the low Hindi of Alwar) every lingual ण of the *Prākrit* (which, as is well known, not only retains all Sanskrit lingual ण, but changes even every *single*, dental न of the Sanskrit into the lingual ण, is changed into a dental न even in those cases where the *Prākrit* represented the original Sanskrit ण. Hence every Hindi word containing a lingual ण must be Sanskritic; e. g., करना to do is *Prākritic*, but करणीयं to do and कारण cause are *Sanskritic*; कान ear is *Prākritic*, but कर्ण ear Sanskritic, &c.

† I. e., of the Gaurian after its full development as a distinct and separate language; leaving out of account, therefore, the *Prākritic* element, which represents a state of the Gaurian, when it was not yet distinct from *Prākrit*.

that all *Sanskritic* elements (of the Gaurian) belong to that class of nouns which admit of no *oblique form*, a class which is much more extensive than the other. But *Sanskritic* elements do not account for the whole of the nouns belonging to that class. There are many nouns in this class which 1., exhibit all the phonetic peculiarities (enumerated above) of the *Prākṛit*; which 2., have the form of the nominative sing. of the *Prākṛit*; and which 3., preserve this form unchanged in all cases (*i. e.*, do not admit of an *oblique form*), indicating their inflexion by post-positions; *e. g.*, elephant is in Hindi हाथी; it is identical with the *Prākṛit* nominative singular हथी (= *Sanskrit* हन्ती, nominative singular of the base हस्तिन्), and is in Hindi the (*inflectional*) base of which the nominative is हाथी, the gen. हाथी का, &c. From this we conclude, 1., that all these nouns have been transferred to the Gaurian not from the *Sanskrit*, but from the *Prākṛit*; but 2., that they were so transferred *not before* the distinctive principles of the Gaurian had fully established themselves, *i. e.*, after the Gaurian had finally and entirely replaced the *Prākṛit* as a separate and distinct language. These nouns, therefore, have an altogether different nature from those nouns which constitute the *Prākṛitic* elements of the Gaurian. The latter are the earliest elements of the Gaurian which were transferred to it from the *Prākṛit* at that early time when the principles of the Gaurian were not yet *formed*, but only in process of formation; when as yet the Gaurian was only a much decayed dialect of the *Prākṛit*. Hence the *Prākṛitic* elements have a mixed character, half *Prākṛit*, half Gaurian; *Prākṛit* they are in showing traces of *organic inflexion*, *viz.*, in the *oblique form* (as differing from the *direct form* of the nominative); Gaurian, in preserving their *oblique form* unchanged in all oblique cases alike, indicating the difference of the various oblique cases by post-positions. On the other hand the other *Prākṛit* nouns entered the Gaurian when its principles were fully formed; and, therefore, becoming subject to the force of those principles, they were fully assimilated by the Gaurian. I shall therefore in future denominate all such nouns as the *proper Gaurian* elements of the Gaurian, to distinguish them from the *Prākṛitic* elements on the one hand, and from the *Sanskritic* elements on the other hand.*

Thus we have seen that the whole of the Gaurian nouns are divided into three classes. 1. The *Prākṛitic* element containing all nouns, which admit an *oblique form*. 2. The *proper Gaurian* element containing one part

* By the term "Gaurian element" only, I shall designate both the *proper Gaurian* and the *Sanskritic* elements together. For all Gaurian nouns may be divided thus:—

1. *Prākṛitic* nouns, *i. e.*, admitting an *oblique form*.
2. *Gaurian* nouns, *i. e.*, not admitting an *oblique form*.
 - a. *Gaurian proper*.
 - b. *Sanskritic*.

of the nouns which do not admit an *oblique form*. 3. The *Sanskritic* element containing the remaining part of the nouns which do not admit an *oblique form*. And from what has been explained above, it follows further that these three elements or classes represent three, *in the main*, successive stages in the development or periods in the history of the Gaurian languages. The *Prākritic* element exhibits the Gaurian in its earliest stage (probably before 800 A. D.) Next comes the *proper Gaurian* element which shows the Gaurian in its middle stage (extending probably from about 800 to 1300 A. D.) Lastly comes the *Sanskritic* element showing the Gaurian in its modern form (beginning probably with about 1300 A. D.)

I may remark here *en passant*, that the nouns (now post-positions) को (Naipali), का (Hindi); दा (Panjābi), जा (Sindhi), ना (Gujarāti), since they exhibit the phonetic peculiarities of the Prākrit (for they stand for the Prākrit [किद्दा or काद्दा or rather for] किद्द्वा or कद्द्वा and the Sanskrit [कतः or] कतकः as explained in Essay II), and since they admit of an *oblique form* (i. e., का, के, दे, जे, ना), belong to the *Prākritic* element of the Gaurian and hence to the earliest period of its history; to that time of its history, in fact, when it was yet merely a modification of Prākrit. The Gaurian was not established as a separate and distinct language until after these nouns had assumed fully the nature of mere inflexional post-positions. This fact it is important to bear in mind, when we come afterwards to the explanation of the nature of the *oblique form* of nouns; and also because, as it will be observed, it tends to confirm the theory of the origin of the genitive post-positions, given in Essay II.

Another point I may also dispose of here, before I pass on to the examination of the *oblique form* in the remaining Gaurian languages, (Marāṭhi, Banṛālī, Uṛiṇa). It has been stated that it is a principle of the Hindi-class Gaurian languages that they assume as their inflexional bases the nouns of their parent languages (Prākrit and Sanskrit) in the form of the nominative singular and preserve this form throughout in all cases. Here two phonetic laws come into play which have the curious effect of making the terminations of many *Sanskritic* and *proper Gaurian* nouns, which would otherwise have been widely different, identical: so that looking simply at the termination, it would be impossible in some cases to judge, to which class of elements such nouns belong. These two phonetic laws are; *first*, the well known law, that final short vowels in Gaurian are *quiescent* or not pronounced, so that a word, though ending in reality in a short vowel, *virtually* terminates in a consonant and is treated accordingly. In most Gaurian grammars such nouns and those ending *really* in consonants are considered alike as constituting the consonantal declension and are subject to identical rules of inflexion. For clearness of distinction in these

essays, all Gaurian words really ending in consonants will have the VIRAMA (विराम) appended to them while those which end only virtually in consonants (but really in short vowels) will be written without it; *e. g.*, कान *car* is pronounced *kān* not *kana*, and treated exactly like बुद्धिमान् *wise* (pronounced *buddhiman*, not *buddhimana*). This explains also how it happened that some words which really end in इ or उ come to be written as if ending in अ. The truth is, that they are not really written with a final अ, but their final इ or उ not being pronounced, was also not written.* The transcription of the word assimilated itself to the pronunciation; *e. g.*, आग *fire* seems at first sight by the analogy of कान, &c., to be really *aga* though pronounced only *āg*; but this is only in appearance, in truth आग stands for आगि (Prakrit अग्गी, Sanskrit अग्निः), but as final इ was not pronounced, it was also suppressed in writing. So again the modern High Hindi कर having done stands for the older Low Hindi करि (Prakrit करिअ, Sanskrit कर्त्तृ), which has dropped its final इ, in accommodation to the pronunciation. In poetry, indeed, आग, कर and other nouns of the same nature are commonly treated as if terminating in अ (*i. e.*, *āga*, *kara*, not as *āg*, *kar*.) but this is merely because according to the native grammatical system, the vowel अ is supposed to be inherent in every consonant.

The *second* law is this, that a final diphthong or long vowel of the Prakrit is reduced by the Gaurian to its inherent simple vowel. The inherent simple vowel of आ is अ, of ए and ई it is इ, of औ and ऊ it is उ. In Prakrit all masculine bases in अ terminate in the nominative singular in औ or ए (cf. Pr. Prak. V. 1, XI, 10); all masculine and feminine bases in इ and उ terminate in the nominative singular in ई and ऊ (cf. Pr. Prak. V, 18); all masculine and feminine bases in आ, ई and ऊ terminate in the nominative singular in आ, ई and ऊ respectively. I have shown above that the Gaurian adopts its nouns from the Prakrit in the form of the nominative singular of the Prakrit. Now in adopting them in this manner, the Gaurian reduces their (Prakrit) terminations आ, ए, ई, औ, ऊ, regularly to their inherent simple vowels अ, इ and उ.† *E. g.*, Sanskrit वार्त्ता = Prakrit

* Traces of this phenomenon occur already in Prakrit; comp. Pr. Prak. XI, 10, according to which sūtra instead of एसे पुलिसे (for Skr एष पुरुषः) may be said and written एस पुलिसि as well as एष पुलिस.

† Traces of this law are not unfrequent already in Prakrit. For the reduction of औ to उ comp. Pr. Prak. XI, ii. (*e. g.*, हसिदु for हसिदो smiling), V, 19—20, (*e. g.*, सालाउ for सालाओ garlands). For the reduction of ए to इ comp. Pr. Prak. V, 22. (*e. g.*, णईदु for णईए by a river), XI, 10, ii. (*e. g.*, पुलिसि for पुलिसे a man), VI, 6. (*e. g.*, काइ for काए of whom). The reduction of a final आ, ई, ऊ occurs only, when they are the final of the first part of a compound; see Pr. Prak. IV. i. (*e. g.*, जउणअदं for जउणआदं the bank of the Jumná; एइसेतो for एईसेतो the river-stream; वइमुचं

वत्ता becomes in Gaurian बात.* This is the *Proper Gaurian* form beside which the Gaurian possesses the word also in the *Sanskritic* form वात्ता. The earliest Gaurian form of बात is वत्त, which is as nearly as possible like the Prakrit वत्ता. It occurs *e. g.* in Chand's Prithiraja Rāyasa (III. 61): भवति वत्त मिट्टि न को, *i. e.*, कोई हानेवाजी बात नहीं मिटती है। Again Sanskrit लोहः = Prakrit सनेहो becomes in Gaurian सनेह, a form which occurs very commonly in Hindi poetry; similarly poetical Hindi has लज्ज gain for Prakrit लहो = Sanskrit लभः; or आयसु order, command for Prakrit आरसा = Sanskrit आदेशः; *e. g.*, in Tulsi Dās's Ramāyan.

जाहि मुनोम जो आयसु दोन्हा ।

सो जन काज प्रथम तेद कोन्हा ॥ *i. e.*

H. H. जिस का मनीशने जो आदेश दिया ।

सो कार्य पहले ही उसने किया ॥

Ayodhyā Kāṇḍ.

Beside these a great many other such nouns in उ are met with in poetical Hindi; in fact, I have no doubt, every noun, that *now* in Hindi prose ends in अ.† What is, thus, a form confined in Hindi to the old and poetic language, appears in Sindhi to be preserved in the common modern language. Dr. Trumpp says: "The old Prakrit ending in o has in Sindhi been split up into two great classes, one of which has corrupted the Prakrit (final) o into u, the other has preserved it unchanged." He adds: "It is noteworthy that many words which in Sindhi end in o, in Hindi end in â, while on the other hand the short final u in Sindhi has in Hindi been thrown away or become quiescent." (Cf. Journ. Germ. As. Society, vol. XVI, p. 131). Also in the common modern Naipali an important instance of that form has been preserved. The nominative plural is there formed by adding हेरु to the noun. Now हेरु is nothing else but a modification of the Prakrit हेरो, Sanskrit धेरः multitude. Though this form has disappeared from

for वल्लसुहं having a woman's face), but comp. Pr. Prak. VI, 6 (*e. g.*, कोअ for कोआ of what). Note that in Prakrit all these forms are *optional*, but not in Gaurian. I may add a few examples from the Mricchhakatikā:—

दश सुवर्णाह लङ्ग जूदक पपली । *i. e.*

Skr. दश सुवर्णस्य क्षता रङ्गा द्यूतकरः प्रपलाभतः ॥

Again शिलु पडाद । - Sanskrit शिरः पतति ॥

* A few other instances are in Hindi खटा, bad, for Prakrit खट्टा, Sanskrit खट्वा; बोन, flute, for Prakrit वोणा, Sanskrit वाणा; लाज, shame, for Prakrit लज्जा, Sanskrit लज्जा; जोभ, tongue, for Prakrit जीहा (or जीभा), Sanskrit जिह्वा; बांह, shade, for Prakrit बाह्वा (see Pr. Prak. II, 18.), Sanskrit बाया.

† These archaic forms are very common in poetry, only it should be noted that as they generally occur at the end of a line, they are usually lengthened to ऊ for metre's sake.

Ganwari and in poetical and old Hindi, the original forms still commonly occur, *e. g.*,

जहं जाहिं भकट भागि ।

तहं वरत देखिं आगि ॥ *i. e.*

II. II. जहां जाते वानर भाग के ।

तहां जलती देखते हैं आग ॥

Lankā Kāṇḍ.

Or जलति आगि घालिली उंबर ॥ *i. e.*

II. II. जलती आग को धरी वरत में ॥

Prithirāj Rāyasā, I. 18.

Again दहन आंखि नित फरकत मोरी ॥ *i. e.*

II. II. दहनी आंख नित्य फरकती है सरी ॥

Ayodhyā Kāṇḍ.

Again आप अकत जबरजपद रामहि देखि नरेश ॥ *i. e.*

आप अकत हाके युबरजपद राम को देखे नरेश ॥

Ayodhyā Kāṇḍ.

Again पितहि विलोकि लाज अति लागी ॥ *i. e.*

II. II. पिता को देखक लज्जा अत्यन्त लगी ॥

Lankā Kāṇḍ.

But also पितु आगसु सब धर्मक टीका ॥ *i. e.*

II. II. पिता का आदेश सब धर्म की टीका है ॥

Ayodhyā Kāṇḍ.

In Marāṭhī, where आग and similar words are mutilated in the same way (see below), the original ई appears again in the oblique cases; *e. g.*, the gen. is आनी आ, just as nom. हरि, gen. हरी चा.

An interesting question here arises: why is it that the Prakrit termination आ has not always become उ in Gaurian, but has remained unchanged (or become आ as in Hindī, Panjābī and Marāṭhī) in many instances? *e. g.*, while the Braj Bhashā forms the Pres. Partic. होतु being (= Prakrit होन्ता) the High Hindi has होता, or while the Prakrit ससहो becomes in old Hindi सनेह, the Prakrit घोड़ो, horse, becomes in modern Hindi घोड़ा (also in Panjābī, Marāṭhī, or घोड़ा in Sindhī, Gujarātī). If my previous remarks be remembered and also that होतु, सनेह, etc., admit of no *oblique form*, while होता, घोड़ा, etc., do admit of one (*viz.* होते, घोड़े, etc.), it will be seen that the forms होतु, सनेह, etc., belong to the *proper Gaurian* element, while होता, घोड़ा, etc., belong to the *Prakritic* element. This, however, is not yet an answer to the question. The question still remains why did some Prakrit words ending in आ not submit to the Gaurian principles, but retained their

In modern Hindī the form राउ (Ráo) is limited to being a certain title of nobility less than Rájá, exactly as it is also the case with the form राइ (mentioned above in the text), a perfectly parallel formation to राउ.

Prākritic complexion? The answer to this question, I believe, to be this : In Prākrit any nominal case in अ may have two forms as regards the termination : 1., a *general* form which it has also in Sanskrit ; and 2., a *particular* form, peculiarly Prākrit, made by the addition of the affix क (see Pr. Prak. IV. 25) ; e. g., bee is अमर (*general* form) or अमरक (*particular* form) ; done is किद (*general*) or किदक (*part.*) ; true is सच (*gen.*) or सचक (*part.*), etc. The consonant क् is generally elided ; hence अमरअ, किदअ, सचअ. The nominative sing. of these cases would be respectively : अमरो or अमरओ (for अमरको) ; किदो or किदओ (for किदको) ; सचो or सचओ (for सचको), etc. Now Prakrit nouns may of course pass into the Gaurian in both or either of these forms. But according as they did so in their *general* or in their *particular* form, their fate was different. If they passed into the Gaurian in their *particular*, peculiarly Prākrit form, they retained their *Prākritic* complexion, and these nouns constitute the *Prākritic* element of the Hindi-class Gaurian. On the other hand, if they passed into the Gaurian in the *general* form, they readily submitted to the action of the pure Gaurian phonetic and grammatical principles (that is, the law to change ओ to उ and the law of not admitting an *oblique form*), and thus these nouns constitute the *proper Gaurian* element of the Hindi-class Gaurian. This may be illustrated again by the present participle ; “being” in Prakrit is हान्तो or हान्तओ, in both forms it passed into the Gaurian ; but the form हान्तओ was contracted to हान्त (for हान्तो) and remained unchanged or modified to हैत (in High Hindi) ; while the form हान्तो was changed to हैतु (for हान्तु). It is easy enough to understand that the Gaurian termination आ (or अ) being a *contraction* of the Prakrit termination अओ could not be reduced to उ, while the simple termination ओ could be so reduced. The same fact, viz. that the Gaurian ओ is a contraction of the Prakrit अओ, may perhaps explain its curious Braj Bhāsha form औ ; for the diphthong औ (= अ + ओ + उ) is more strictly an equivalent of अओ (i. e., अ + ओ or अ + अ + उ) than the simple ओ. Farther proofs of this theory I must defer for the present. I shall have occasion again to refer to it in the course of this essay.*

* Another theory has been proposed lately by Mr. Beames (Indian Antiquary, Part V., 1872) which explains the phenomenon by the different accent of the words ; oxytones retaining the Prākrit termination आ (or अ) ; and barytones reducing it to उ (or अ). This theory is quite insufficient for the purpose. Mr. Beames himself admits that “it cannot be said that every oxytone substantive in Sanskrit gives rise to a noun in ā or o in modern languages. On the contrary the exemptions to the rule are as numerous as the illustrations of it.” This admission, surely, is fatal to the theory. But though in the case of two different oxytone words it may be possible to show cause, why in the one instance the accent had its legitimate influence, but not in the other, this is manifestly inadmissible, when it is *one*

But to return to our enquiry, we have now seen that if a Prākṛit noun having the *general* form of its base, passed into the Gaurian, it submitted to the laws of the Gaurian. Hence *e. g.*, the nominative singular of the Prākṛit **सनहो** would become the *inflexional base* in the Gaurian, not admitting an *oblique form*, but remaining unchanged in all cases; thus nominative **सनेहो**, genitive **सनेहोका** instrumental **सनेहोने**, etc. But the form **सनेहो** of the Gaurian inflexional base is, then, modified to **सनेह** which now is the unchangeable inflexional base of all cases; lastly, **सनेह** is modified to **सनेह** which still remains the unchangeable inflexional base in modern Hindī. But this process of phonetic corruption has obtained in all modern Gaurian languages almost without exception, and has reduced all unchangeable inflexional bases, which originally ended in **आ**, to the form of the crude (*general*) base in **अ**. Only in Marāṭhī a few isolated instances of the original unchangeable inflexional base in **ओ** remains; *e. g.*, **लाहो** gain (= nominative singular Prākṛit **लाहो** = Sanskrit **लाभः**) has nominative **लाहो**, gen. **लाहोचा**, dat. **लाहोला**, etc. In the present poetical and old Hindi it occurs only as **लाह**, and from the modern High Hindi it has disappeared altogether and has been substituted by the *Sanskritic* **लाभ**. Some other instances in Marāṭhī of the base in **ओ** are **कापो** surprise, **डाहो** sensation of burning, **टाहो** moaning, **माहो** bees' nest.

Confining our attention to the modern Hindi and the example **सनेह**, we find that the modern Hindi possesses also another form of this same word; *viz.*, **स्नेह**, which is also the unchangeable inflexional base of all cases in the singular; thus: nominative **स्नेह**, gen. **स्नेह का**, instr. **स्नेह ने**, etc. The difference between them is this, that **सनेह** has come into the Hindi from the Prākṛit, and belongs to the *Proper Gaurian* element, whereas

and the same word which now exhibits the Prākṛit termination **ओ** (or **आ**), now the Gaurian reduced termination **उ** (or **अ**). Now, in Hindi at all events with which I am more particularly acquainted, every so-called *tadbhava adjective* may be used with both forms of the termination; (though no doubt one is more common than the other); *e. g.*, true is **सच** as well as **सच्चा** (fem. **सच्ची**); great is **बड़** as well as **बड़ा** (fem. **बड़ी**); you may say **यह बड़ गंवार है** as well as **यह बड़ा गंवार है** he is a very vulgar man; you may also say **यह बात सच है**, but *not* **यह बात सच्ची है**; again it is more idiomatic to say **यह सच बात है** than **यह सच्ची बात है**. If it be said that it depends upon circumstances whether the accent of the *same* word should influence the termination or not, then clearly it is not the accent but that ulterior cause which determines the form of the termination. I think there can be no doubt that the real cause of the difference in the termination is the absence or presence of the *pleonastic* affix **क**. This accounts most easily and naturally for all the facts of the case. This is no more a mere hypothesis; though for the present I must content myself with stating the fact; the proofs, which I hope to bring forward in another place, amount nearly to demonstration.

क्लेह has come into it from the Sanskrit directly and belongs to its *Sanskritic* element, or, as I have explained in the introductory essay, क्लेह is the high Hindî substitute for the low Hindî सनेह, which is considered to be vulgar. But what it is important to observe is this, that सनेह and क्लेह are identical as regards their termination. This is a curious result of the action of phonetic laws, by which the *Proper Gaurian* elements, after a run of centuries through constantly changing forms, return to their original *Sanskritic* form. In the case of सनेह and क्लेह the appearance of the whole word is so alike, that perhaps it may have sometimes escaped observation that there is at all a double form of the word of so widely different origin. But the identity may even go further than this, so that in the case of not a few words it may be now impossible to determine, whether they are contributions of the Prakrit or the Sanskrit. The cause of the identity of termination on the part of the *Sanskritic* elements of the Gaurian is the inability of the latter to tolerate a visarga* and its want of a neuter gender. All Sanskrit nouns when incorporated into the Gaurian, pass into it in the form of the nominative singular according to the Gaurian principle. Thus father is पिता, brother is भ्राता, mother is माता; they are the nominatives singular of the Sanskrit bases पिट्, भ्राट्, माट्. The *proper Gaurian* forms of these words are पिउ, भाउ or भाऊ, मातु which are still in use in the Panjabî, Marāthî and poetical Hindî. Now the nominative singular masculine of Sanskrit bases in अ, इ, and उ ends in a visarga. Hence the Gaurian which is unable to tolerate a final visarga, elides it, and therefore *practically* adopts Sanskrit masculine nouns in अ, इ, उ in their *crude base*. Sanskrit neuter bases in इ and उ have no inflexional termination in the nominative singular, and their adoption by the Gaurian makes, therefore, no difference in their case; but Sanskrit neuter nouns in अ end in the nominative singular in स. The Gaurian languages which do not possess a neuter gender,† when adopting such Sanskrit neuter nouns, simply

* *E. g.* Sanskrit दुःख becomes in Hindî दुख, Sanskrit अन्तःकरण becomes in Hindî अन्तकरण. Sometimes instead of the usual suppression of the visarga, it is turned into ह, but only in Low Hindî.

† This is strictly true only as regards *Sanskritic* neuter nouns. But as regards *Prākṛitic* neuter nouns most Gaurian languages possess them (another evidence by the way that these *Prākṛitic* nouns are the oldest element of the Gaurian); *e. g.*, the Marāthî, the Gujarātî, the old and poetical Hindî (in Clarendon Bardai) and present low Hindî Braj and Alwari dialects. The modern High Hindî, on the other hand, has lost the neuter gender throughout. Thus the Sanskrit neuter, part. fut. pass. करणीयम्, which has passed through the intermediate stage of the Prakrit into the Gaurian languages is in Marāthî करणें, Braj करवैँ, Alwari करनूँ (all neuter); while in the High Hindî it is करना, which latter, by dropping the anusvara of the Braj, has become a masculine noun.

cut off the final **म्** and thus turn them into masculine nouns; *e. g.*, वनम् forest becomes वन, just as रामः becomes राम.

We will now pass on to the Marāṭhi. The Marāṭhi differs from the Hindi class Gaurian languages in having preserved a much larger proportion of the *Prākritic* element. It predominates in it very largely over the *proper Gaurian* element; so that of all the Gaurian languages the Marāṭhi is the most purely *Prākritic* tongue.

In Marāṭhi by far the greater majority of nouns admits of an *oblique form* and therefore, according to the canon previously laid down, belongs to the *Prākritic* element of the language. To the *proper Gaurian* element, not admitting an *oblique form*, only the following nouns belong.*

(1). All proper nouns and nouns of respect ending in आ (masc. and fem.), *e. g.*, रामा Rāma, gen. रामा चा, etc.; but माता mother मातेचा; सासरा father-in-law, gen. सामसा चा.

(2). All nouns in ए, ऐ, औ, आ; as सवे habit, gen. सवेचा; त्रिवै tripod, gen. त्रिवै चा; वायको woman, gen. वायको चा; पौ mark on a die, gen. पौचा.

(3). All masculine nouns in ऊ (exc. परम्, वाटसरू, यात्रेकरू, गड्ड, गू, चाटू, बारू, पणवू, पू, भाऊ, माडू, कू, लाडू, विंचू, वेलू, साकू; साडू); *e. g.*, गेरू red chalk, gen. गेरू चा; but वाटसरू traveller, gen. वाटसरा चा.

(4). All feminine nouns in ई and ऊ (exc. स्त्री and other monosyllabic nouns in ई, and the following in ऊ, *viz.* आऊ, ऊ, जलू जाऊ, टालू, तालू, दाखू, पिखू, पेलू, बाजू, भालू, बालू, माखू, खू); *e. g.*, गाडी carriage, gen. गारी चा; खडू chalk खडेचा; but साखू mother-in-law, gen. सासवे चा or साखे चा; स्त्री woman स्त्रियेचा.

(5). The following neuter nouns in ऊं; *viz.* अवालू, आगळू, उश्णू, उवालू, खटू, चांचू, बांकू, जानू, टाटू, पावेळू, फांकू, राजालू, हांडू, हंघं; *e. g.*, खटू, gen. खटूचा; but तटू pony, gen. तटा चा, and तावू ship, gen. तावा चा.

All those nouns that constitute the *proper Gaurian* element of Marāṭhi, are subject to those Gaurian laws which have been already explained; namely, they have been taken over from the *Prākrit* in the form of the nom. sing. of that language; and having entered the Gaurian (Marāṭhi) in that form, they retain it unchanged as their inflexional base of the direct as well as the oblique cases; *e. g.*, हत्ती elephant, in *Prākrit* nom. sing. हत्थी = Sanskrit हस्ती (nom. sing. of हस्तिन्) has nom. हत्ती, gen. हत्तीचा instr. हत्तीने dat. हत्तीला, etc. Again लाभो gain, in *Prākrit* लाभो, in Sanskrit लाभः (nom. sing. of लाभ) has nom. लाभो, gen. लाभो चा†

* See the Student's Manual of Marāṭhi Grammar, pp. 28, 29, and the Grammar of Marāṭhi by Dādoba Pandurang Esq., pp. 72, 73.

† All such nouns in औ are in reality anomalous; as according to the ordinary phonetic laws of the Gaurian, the final *Prākrit* औ should be reduced to अ (*i. e.* first to उ, then to अ). Accordingly we find that the nouns in औ are only a very few isolated cases.

But (as in the Hindi class Gaurian languages) that form of the noun (*i. e.* the nom. sing. of the Prakrit) undergoes in its passage from the Prakrit to the Gaurian various phonetic modifications in its termination. The following are typical examples रामो, nom. sing. Prakrit of राम (= Sanskrit रामः), changes in the Gaurian its final diphthong to the more agreeable long vowel आ, thus रामा which, then, remains the unchangeable inflexional base of all cases. Compare in Hindi घोड़ा for Prakrit घोड़ा or घोड़आ, etc. Again the Maráthi तिवै stands for the Prakrit nom. sing. तिवदी (for Sanskrit त्रिपदी; the medial द is elided, leaving तिवई which form occurs in Maráthi as an alternative of तिवै; finally तिवई changes to तिवै which being now a modification altogether peculiar to the Gaurian (Maráthi) remains an unchangeable inflexional base. The word तिवई illustrates also another case. It is a feminine noun, which in the sense of tripod does not occur in Sanskrit, but in Bangali it is त्रिपदी. The affix ई, is the peculiar Gaurian formative of the feminine, and feminine nouns thus formed are therefore subject to the Gaurian law (of not admitting an *oblique form*); *e. g.*, गाड़ी, carriage, gen. गाड़ी चा, dat. गाड़ी ला; तिवई, gen. तिवई चा, dat. तिवई ला, etc. As the feminine termination ई, so also the fem. and mase. termination ऊ is a peculiar Gaurian modification and hence unchangeable in inflexion; as in खडू chalk for Prakrit खडिअ (or खडिका) = Sanskrit खटिका (or perhaps rather for a Prakrit खडका; गेरू chalk for Sanskrit गेरिका; बेलू bamboo for Sanskrit वर्तिका and Prakrit वानो, and so forth.

So far then (as regards the *proper Gaurian* element) we have seen, the Maráthi is at one with the Hindi-class Gaurian languages. But they differ in the treatment of their *Sanskritic* element. In the Hindi-class Gaurian languages we have seen the rule is, to treat the *Sanskritic* element according to the law of the *proper Gaurian* of keeping the inflexional base unchanged in all cases. On the contrary in Maráthi the rule is, to distribute all *Sanskritic* and foreign words among the various declensions according to their final vowels. And thus it happens that while some of them are treated according to the *proper Gaurian* law of not admitting an *oblique form*; others come under the law of the *Prakritic* elements and admit an *oblique form*; *e. g.*, all Maráthi nouns in आ mase. and fem.) are *Prakritic*; except nouns expressing titles or names, which are *Gaurian proper*. Their analogy is exactly followed by *Sanskritic* and, we may add, *foreign* words. For while such *Sanskritic* nouns as गंगा, द्वारका, रमा, etc. (all names), and मुन्ना, खोदा (Arabic titles), by the analogy of दादा, बाबा, काका, etc., remain unchanged, thus gen. गंगा चा, etc., मुन्ना चा, etc.; on the other hand, all other *Sanskritic* nouns, as पिता, भ्राता, धाता, आत्मा, कर्त्ता, etc. (all masculine), by the analogy of the *Prakritic* words चांवा, चांगला, etc., form an *oblique form*, thus gen. पित्या चा, आत्म्या चा, just like चांब्या चा, चांग्या चा; or the *Sanskritic* nouns भाषा, धिया, स्तिका, माता, etc. (all feminine), by the analogy of the *Prakritic*

nouns पागा, साला, etc., form an *oblique form*, gen. भाप चा विद्य चा, etc., just as पागे चा, साले चा. (In the Hindi-class Gaurian, it must be remembered, all these nouns are unchangeable; thus Hindi gen. पिता का, आत्मा का, भाषा का, विद्याका, etc.). Again the *Sanskritic* nouns शास्त्री, दोषी, पापी, etc. (nom. sing. of शास्त्रिन्, देविन्, etc.) form the gen. sing. शास्त्र्या चा, दोष्या चा, पाप्या चा, by the analogy of the *Prākritic* words न्हावी, साली, etc., which form gen. न्हाव्या चा साल्या चा. Here, however, an option is possible, for the *proper Gaurian* noun हत्ती, gen. हत्ती चा, also affords an analogy. Accordingly we find that some *Sanskritic* words have chosen to follow the analogy of हत्ती and such like Gaurian words and, according to the Gaurian law, do not admit an *oblique form*. Such are the *Sanskritic* nouns हस्ती, करी, दंडी, दन्ती, etc., and the *foreign* nouns मौलवी, काजी, मुशालशी, etc. Here a great deal of arbitrariness seems to prevail as to the analogy which should be followed. As regards the nouns in इ and उ (whether masc., fem. or neuter), they appear to be all *Sanskritic*; at least if Dadoba's grammar represents the case fairly; for none of the instances given by him (pp. 76, 78, 79, 86, 87, 89, 94, 95,) need be a word derived from the Prakrit; they are such as अलि, कवि, अग्नि, गुरु, मृत्यु (masc.), रुचि, यक्ति, धेनु, धातु (fem.); वारि, अस्थि, वस्तु, (neuter). It should be remembered that according to the Gaurian law explained formerly, the final visarga of the Sanskrit nom. sing. is dropped in the Gaurian; hence the nouns just mentioned are modifications of the *Sanskrit* nom. sing. कविः, अलिः, अग्निः, etc., etc. Now all these *Sanskritic* nouns are treated by the law of the *Prākritic* elements and admit an *oblique form* in long ई or ऊ. It is not very difficult to see the analogy which they follow. There are in Marāṭhī a good number of feminine nouns in अ which belong to the *Prākritic* element and form an *oblique form* in long ई. The reason of this is simply this, that they are really feminine nouns in short इ, which इ, however, according to the Gaurian law explained before, becomes quiescent and, being also suppressed in writing, is thus apparently changed to अ.* In an older state of Marāṭhī, no doubt, the original final इ was both written and spoken (similarly as it has been proved already in the case of Hindi); e. g., fire in Marāṭhī is आग (which is the *proper Gaurian* form of the word, beside which the *Sanskritic* form अग्नि is also used); in reality it is अगि, standing for the Prakrit अग्नी which (by the Gaurian law of shortening

* This law applies strictly only to words derived from Prakrit. In words derived from Sanskrit the final इ (or उ) is often pronounced and, as a rule, always written. This explains the fact, why all Marāṭhī nouns in इ (or उ) appear to be *Sanskritic*. Exceptionally, however, the final इ may be dropped in Sanskrit words; e. g., गत, जात, रीत occurs besides गति, जाति, रीति (cf. Dadoba's Grammar, p. 91), and the truth of the theory stated in the text is confirmed by these nouns, which all form their *oblique form* in long ई, as gen. गती चा, रीती चा.

final long vowels) becomes आगि in Gaurian Marāṭhi and finally आग. Other such feminine nouns are भिंत (for Sanskrit भिन्ति; Prakrit भिन्तो; भेड (perhaps Skr. अभ्यदि); चूल (for Skr. चुक्त्रि; Pr. चुक्को); केल (for Skr. कदरी, Pr. केरी); वांक (for Skr. वक्त्री, Pr. दक्की); पांफल (perhaps for Skr. सुपारी); बेर (for Skr. बदरी, Pr. बेरी, cf. Pr. Prak. I, 6). They form their gen. आगी चा. भिंती चा, भेटी चा, चूली चा, कैली चा, etc., etc. And following the analogy of these nouns the *Sanskritic* nouns in इ form their *oblique form* also in इ; thus gen. झरी चा. खत्तो चा. झस्थी चा. With the *Sanskritic* nouns in उ it is a similar case, there is a small number of nouns (masc. and fem.) in long ऊ which belong to the *Prākritic* element and form their *oblique form* in long ऊ. Their *oblique form* is not identical with their *direct form*, however it may seem from the form; on the contrary the termination ऊ of the *oblique form* is analogous to the termination ई of the *oblique form* of nouns in इ; while the termination ऊ of the *direct form* is the Prakrit substitute for the Sanskrit final उः. All such Marāṭhi nouns in उ, namely, are derived from bases in उ, which in Sanskrit form their nom. sing. in उः which in Prakrit changes to ऊ, and is retained anomalously in the Gaurian (instead of being reduced to उ and then made quiescent). Examples of such nouns are मेरु mount Meru, etc. The gen. of मेरु (or regularly मेरु) is मेरुचा, just as आग (or आगि) forms gen. आगीचा. Now following the analogy of these nouns in ऊ (or as it ought to be according to the strict Gaurian law उ) the *Sanskritic* nouns in उ make their *oblique form* in long ऊ; thus सत्य has gen. सत्युचा; धातु has gen. धातुचा, etc. Beside that class of feminine nouns in अ which form their *oblique form* in ई, there is another class of feminine nouns in अ which form their *oblique form* in ए; e. g., जीभ tongue, gen. जीभेचा. The final अ of this class is the Sanskrit and Prakrit final आ shortened to अ according to the Gaurian law; thus जीभ stands for the Sanskrit जिह्वा, Prakrit जीहा or जीभा (cf. Pr. Prak. I, 17.) Now in consequence of the native grammatical fiction, that the vowel अ is inherent in all consonants all foreign feminine nouns which really end in a consonant, are supposed to end in अ; and hence it comes to pass that they are treated according to the analogy of the *Prākritic* feminine nouns in अ. But as the latter admit a two-fold *oblique form* either in ई or in ए, the foreign feminine nouns also form their *oblique form*, some in ई, others in ए. There seems some rule to obtain whether they should form the *oblique form* in ई or in ए. But I find a great difference among Marāṭhi grammarians as to that rule; e. g., according to the *Manual* all foreign fem. nouns in त, द, न make their *oblique form* in ई, but all abstract nouns formed by the Arabic formative त, as ताजीम, तलीम, तारीख, तालीम, तसरीफ, etc., form their *oblique form* in ए. On the other hand in Dadoba's Grammar some of the abstract nouns with initial त are said to form their *oblique form* in ई, as तलीम; others as तालीम, तारीख even in आ, as if they were mascul. nouns (according to the ana-

logy of the *Prākṛitic* masc. nouns in अ, which will be explained presently). Again while the *Manual* declines, *e. g.*, जंजीर chain, मेहोस beloved in the gen. जंजीरे चा, मेहोसे चा; Dadoba makes the gen. जंजीरी चा, मेहोसी चा, etc.—There remains still to consider the case of the *Sanskritic* nouns in अ (masc. and neuter). Their final is the resultant of the dropping, according to the Gaurian law, of the visarga and anuswara of the nom. sing. of the nouns in Sanskrit; *e. g.*, the Marāṭhī (*Sanskritic*) nouns देव, वन are modifications of the Sanskrit nom. sing. देवः, वनः. All (non-Sanskritic) Marāṭhī nouns in अ belong to the *Prākṛitic* element, making an *oblique form* in आ, and their analogy is followed by the *Sanskritic* nouns in अ and also by such foreign nouns as really end in a consonant, but, according to the native grammatical fiction, are supposed to end in अ; *e. g.*, as the *Prākṛitic* वाम heat (for Skr. घामः, Prakrit वक्का); दूध milk (for Skr. दग्धः, Pr. दुडो) have in the gen. वामाचा, दूधाचा; so the *Sanskritic* देव God, etc., have देवाचा and the foreign nouns कुसर fault, etc., have gen. कुसराचा.

Here the same interesting question arises which I have had occasion to touch upon when treating of the *proper Gaurian* nouns in अ in the Hindi-class Gaurian languages. The problem there was to explain the reason, why, while all Prakrit nouns (having a base in अ) end in the nom. sing. in आ, in the Hindi-class Gaurian languages some of them modify आ to आ and retain their *Prākṛitic* character in admitting an *oblique form* (in ए or आ), and others modify आ to अ and assume the *proper Gaurian* nature of not admitting an *oblique form*. A very similar phenomenon is exhibited by the Marāṭhī. Here we have 1., *Prākṛitic* nouns in अ, as दूध milk, वाम heat, पाख wing, नीज sleep, घाट bell, झोंट lip, etc. Their final अ has no doubt arisen by the same process as the final अ of such words in Hindi (as explained above); *etc.*, the original Prakrit termination आ changed to उ, and this उ afterwards become *quiescent* and thus, being omitted in writing, was substituted by अ. These nouns form their *oblique form* in आ, thus gen. दूधाचा, वामा चा, नीजा चा, etc. 2., *Prākṛitic* nouns in आ as घोडा horse, चांगला good (in fact all adjectives in आ) which form their *oblique form* in आ, thus gen. घोडाचा चा, चांगला चा, etc. The final आ in this class of nouns has arisen, as in the Hindi-class Gaurian, by substituting the more agreeable long vowel आ for the harsher Prakrit diphthong आ. In old Marāṭhī and in the pronouns तो, जो, etc., the original Prakrit diphthong आ is still preserved (see *Manual* p. 17, rule 84, note).* The difference between these two classes is to be

* According to the *Manual*, p. 29, nouns in णारा and पणा do not change in the oblique cases. But this is wrong according to Dadoba's grammar, where p. 74, rule 207, the nouns in पणा are declined exactly as all other nouns in आ. *etc.*, making an *oblique form* in या; thus दे.पण्याचा, and p. 263, where from the examples of

explained by the same principle by which the similar difference in the Hindi-class Gaurian was explained; *viz.*, that it is caused by a difference in their resp. derivative bases. The nouns in अ with an *oblique form* in आ, namely, are derived from the *general* base of the word in अ, but the nouns in आ with the *oblique form* in या from the *particular* (Prākṛit) base formed by the affix क (or more accurately as will be shown hereafter, इक); *e. g.*, धाम is derived from the *general* base धम् (Sanskrit धमे), but घेड़ा from the *particular* Prākṛit base घेड़िक (= घेड़क, as कैरिक = कैरक) or Sanskrit घेटक. The full discussion and proof of this important principle I must defer till I come to the explanation of the nature of the *oblique form* of the inflexional base of nouns with which it is closely connected. Here I will only note that a parallel phenomenon is exhibited by the neuter nouns, some of which terminate in अ, others in ऊं or एं or ईं. Of these the former correspond to the mascul. nouns in अ; as the final अ of the latter is a modification of the Prākṛit आ and Sanskrit अः, so the final अ of the former (the neuter) is a modification of the Prākṛit (neuter) termination अं and Sanskrit अम्; again both the masc. and the neuter nouns in अ make equally their *oblique form* in आ. On the other hand the neuter nouns in ऊं, एं, ईं, correspond to the mascul. nouns in आ and form like the latter their *oblique form* in या or वा, and are also, like the latter, derived from the particular base in क or rather इक (perhaps उक); *e. g.*, मोती pearl. = Prākṛit मोत्तिक (= मुत्तक for Sanskrit मुक्त + कम्); फाँख branch of a river = Prākṛit फंसक (or फंसुक; see Pr. Prak. III, 36. = Sanskrit स्पर्शकम्); अँख tear = Prākṛit अंसुक (cf. Pr. Prak. IV. 15. for Sanskrit अश्रु + क), etc., etc.

We now proceed to the investigation of the *inflexional* base in Bangālī and Uriya. These differ from the other Gaurian languages in not possessing an *oblique form* at all. Nevertheless it is probable, that these languages are not altogether destitute of a *Prākṛitic* element. In Bangālī there are two post-positions for forming the gen. case; *viz.* एर and र. Of these एर must be the original one, for we can imagine एर having been, in the course of

nouns in णार it appears, that they likewise are declined like ordinary nouns in आ. As regards nouns in णार Dadoba's statement is confirmed by the Manual itself; or on p. 63, rule 112, it is said that all part. adj. in आ, as those ending in ता, लेला णार, are declined like ordinary adjectives in आ, *i. e.*, making an *oblique form* in या. If nevertheless the first statement of the Manual should be correct, the anomaly is to be explained thus; the *oblique form* of these nouns is not identical with the direct form (that is to say these nouns do not belong to the *proper Gaurian* element) but with the *oblique form* in आ of nouns in अ. Their case is a similar one to that of some nouns in क which has been already explained. Their anomaly consists in this, that their *direct form* which originally ended in आ was not modified to अ as demanded by Gaurian law, but only to आ.

time, phonetically curtailed into र, but not र having been expanded to एर. Hence the use of र will indicate a later inflexional formation; and accordingly we find that all those *real* Bangali (*i. e.*, not *Sanskritic*) nouns, to which the gen. sign. र is added belong to the *proper Gaurian* element. The principles distinguishing the Gaurian element, as explained already are, that the Gaurian adopts the nouns of its parent language (Prākṛit or Sanskrit) in that form which they have there in the nom. case; and the nouns thus adopted in their old nom. case, become anew the base, to which the inflexional signs of the Gaurian declension are added. This base I call the *inflexional base* in opposition to the *crude base* which is the base to which the inflexional signs (or affixes) of the Sanskrit or Prākṛit are added, and which is that which the noun exhibits before any inflexional sign at all is added; *e. g.*, घोटक horse is the *crude base* to which in Sanskrit or Prākṛit, the inflexional signs (or affixes) are added. The affix of the nom. sing. in Sanskrit is the visarga (*i. e.*, स्), in Prākṛit ओ; hence the nom. sing. of घोटक in Sanskrit is घोटकः; in Prākṛit घोडको (or घोड़ो). In this form घोड़ो the noun is adopted by the Gaurian; and this form घोड़ो or (by the modification already explained) घोड़ा becomes in the Gaurian, the base to which the inflexional signs (or post-positions) are added. Hence in Bangālī the nom. sing. of the inflexional base घोड़ा is घोड़ा (the nom. not being distinguished by any sign, *i. e.*, being identical with the Prākṛit nominative); the gen. sing. घोड़ा + र or घोड़ार, etc. Similarly हाथी elephant (being the Prākṛit nom. sing. हत्थी, Sanskrit हस्ती of the *crude base* हस्तिन्) has in the nom. sing. हाथी, gen. sing. हाथी + र or हाथीर. Again जौ lac has in the gen. sing. जौ + र or जौर.

The case of those Bangālī nouns which add the sign एर in the gen. sing. is probably a different one. It has been shown already in the IInd essay that एर is a curtailment of कैर and that कैर was added not only in the *phonastie* way to the genitive of the noun, but also often *compounded* with the noun itself to signify the gen. case of the latter, and since only in composition (excepting the isolated case of the enclitic particle पुनर) an initial single consonant is dropped, it is the most natural way to account for the origin of एर to suppose that all the nouns to which it is added, are in the form of the *crude base* with which एर (*i. e.*, कैर with the initial क् elided) is *compounded*. Now all nouns (or rather their *crude bases*) with which एर is compounded, end in अ; and अ coming into Sandhi with the diphthong ए of एर was dropped; *e. g.*, tiger is बाघ (Prākṛit *crude base* for the Sanskrit *crude base* बाघ्र), and its gen. in Prākṛit might be expressed by बाघकैरओ; this in Bangālī would change to बाघकैर or बाघ एर or बाघेर, just as, *e. g.*, चर्मकार = चर्म - कार = चमार shoemaker. It will be noticed that this way of adding or compounding एर with the *crude base* of the noun is not according to the

principles of Gaurian, which adds the case-sign only to an *inflexional base* (or rather inflected base, *viz.*, the Prākṛit nom. sing.); but strictly according to the principles of Prākṛit. Hence those nouns in Bangālī which add एर constitute the *Prākṛitic* element of Bangālī in opposition to its *Gaurian* element which adds simply र. We may assume, that at the time of the formation of the Gaurian principles of declension, एर, (*i. e.*, the modified form of कैर) had become finally established as the gen.-sign., and its real nature was forgotten. The Gaurian then added एर as an enclitic part of speech to its inflexional base to signify the genitive; *e. g.*, (घोड़ो or) घोड़ा (inflex. base) + एर (enclitic gen. particle); and in contact with the inflexional base which always ended in a vowel, the enclitic एर lost its initial ए, according to a regular tendency of such enclitic words; *e. g.*, the Sanskrit इदानीम् now is in Prākṛit regularly only दानीम्, again पुनर् in Pr. is उण, in the Gaurian only न for ण (as in Hindi कौन for को उण = कः पुनर्). Hence घोड़ा + एर becomes घोड़ा + र or घोड़ार.

There still remains a class of Bangālī nouns which require an explanation, as they seem to contravene the ordinary rule of the gen. formation; *viz.* the Bangālī adjectives in अ, as छोटा small, बड़ा large, भला good, etc. They add not एर as might be expected, but र; *e. g.*, छोटर, not छोटेर. If we compare these Bangālī adjectives with those nouns, that add एर, two facts become at once apparent which distinguish them one from the other, and which stand in the relation of cause and effect to each other. Those two facts are; 1, those nouns which add एर (having dropped their final अ in Sandhi with एर) end in a *consonant* and are pronounced accordingly; thus बाघ tiger is read vāgh and not vāgha (or vaghō). On the other hand those adjectives which add र, have retained and are pronounced with a final अ, thus छोटा small is read chhōṭa (or chhōṭō), but not chhōṭ. The other fact which is the cause and explanation of the first one is this, (2), that those Bangālī nouns which add एर occur in an *identical* form in the Hindi-class Gaurian and in Marāṭhī; while those which add र correspond to nouns in आ or औ in the Hindi-class Gaurian and in Marāṭhī; *e. g.*, बाघ tiger is बाघ in Hindi, Naipālī, Panjābī, Sindhī, Gujarātī and Marāṭhī; but छोटा small is छोटा or छोटे; भला good is भला or भलो, बड़ा great is बड़ा or बड़ो, etc. in those languages. Now, as has been already shown, all such nouns ending in आ or औ and admitting an *oblique form* (in आ or ए in the Hindi-class Gaurian and या in Marāṭhī) belong to the *Prākṛitic* element of the Gaurian and are formed from the *particular* Prākṛit base in क. Hence it follows that those Bangālī nouns whose final अ is pronounced, are formed from the *particular* Prākṛit base in क; while those whose final अ is not pronounced are formed from the *general* base; and the final अ of the former is pronounced for the very reason because it is the remnant of the original ending अक. Take for instance the Bangālī adjective noun छाट

small, in Hindī it is **क़ोट** and stands, therefore for an original Prākṛit **क़ोटको** or **क़ोटयो**. The equivalent for the latter in Bangālī would be **क़ोटक** (or **क़ोटअ** i. e. the *crude* base) and the gen. of it **क़ोटक + एर** or **क़ोटअ + एर** or (eliding the final **अ** in Sandhi with **एर**) **क़ोटकेर** or **क़ोटएर**; and now the initial **ए** of the enclitic **एर** after the final **अ** inherent in **क़ोट** is elided just as **घेड़ा + र** instead of **घेड़ा + एर**; hence we have **क़ोटएर** *chhotar* (or *chhotör*). There is one exceptional gen. form in Bangālī, which proves and illustrates well the process by which **क़ोटएर** and such genitives were formed. I refer to the gen. of the pronominal adjectives **एत** or **अत** or **तत** so many, **यत** as many, **कत** how many, which have a double form (see Bang. grammar of Samachurn Sircar p. 85), either **एतर**, **अतर**, **ततर**, **यतर**, **कतर**; or **एतकेर**, **अतकेर**, **ततकेर**, **यतकेर**, **कतकेर**. From the way Samachurn spells the latter forms (*viz.*, appending a virāma to **एत्**, **अत्**, etc., and thus making them terminate with a consonant), it would appear that he considers the whole of **केर** to be the sign of the gen., and the base to be only **एत**, **अत**, **तत**, **यत**, **कत**. If this be correct the form **केर** confirms my theory that the gen. - sign **एर** or **र** is but a curtailment of an original **केर** (the remnant of the Prākṛit **क़ेरक**). But I am inclined to think that the pronunciation of **एतकेर**, **अतकेर**, etc. as *et-ker*, *at-ker*, etc., instead of *etaker*, *ataker*, etc., is only a vulgar corruption, and that the words **एतकेर**, **अतकेर**, etc. ought really to be divided into **एतक + एर**, **अतक + एर**, **ततक + एर**, **यतक + एर**, **कतक + एर**, so that the base is really **एतक**, **अतक**, etc., and the gen. sign **एर**. My reason is this: the corresponding forms in Hindī are **इतना** or **इत्ता** so many, **जितना** or **जित्ता** as many, **कितना** or **किच्चा** how many, with the *oblique forms* resp. **इतने** or **इत्ते**, **जितने** or **जित्ते**, **कितने** or **किच्चे**. These words, having a *direct form* in **आ** and an *oblique form* in **ए**, belong, according to the ordinary principles of Hindī, to the Prākṛitic element and are derived from the *particular* Prākṛit base in **क**. They presuppose, therefore, a Prākṛit original **इत्तक** or **इत्तिक**, **जित्तक** or **जित्तिक**, **कित्तक** or **कित्तिक**. As a matter of fact, these forms or, at least, forms almost identical (see Pr. Prak. IV, 25.) occur in Prākṛit; *viz.*, either **एत्तिअ**, **तेत्तिअ**, **जेत्तिअ**, **केत्तिअ**, (for **एत्तिक**, **तेत्तिक**, **जेत्तिक**, **केत्तिक**), or **एद्दह**, **तेद्दह**, **जेद्दह**, **केद्दह** (in which **इ** stands for **च** and **ह** for **क**, see Pr. Prākṛit II, 4, **फलिहो** for Sanskrit **स्फटिक**; hence = **एत्तक**, **तेत्तक**, **जेत्तक**, **केत्तक**). Here, on the one hand, the Prākṛit **ए** has been reduced in Hindī to **इ**, (thus **इत्तिक** or **इत्तिअ** for **एत्तिक** or **एत्तिअ**); on the other hand, in Bangālī, it has been reduced to **अ** (thus **ततक** for **तेत्तक** or **तेद्दह**), and besides the double consonant **त्त** is reduced to one **त**.* Thus we

* These Bangālī forms **एतक**, **यतक**, **कतक**, throw light on the origin of another Gaurian form; *viz.*, that of the Hindī participle present in **त** or **ता** (as **चलत** or **चलता** going). The Sanskrit affixes **अत्**, **वत्**, **मत्** become in Prākṛit regularly **अन्ना**, **वन्ना**, **मन्ना**; cf. Pr. Prak. IV, 25. VII. 10; thus Skr. **धनवत्** rich is Pr. **धनवन्ना**, Skr. **पठत्** reading is Pr. **पठन्ना**. Similarly Skr. **कियत्**, **इयत्**, **यावत्** ought to be in

have instead of the Prākṛit एत्तिअ तेत्तिअ, जेत्तिअ, केत्तिअ, in Bangālī एतक, नतक, यतक, कतक.* Now in Hindi इत्ता, किता, जित्ता belong to the *Prākṛitic* element; hence naturally their corresponding forms in Bangālī एतक, यतक, कतक, will belong to the *Prākṛitic* element of the Bangālī. But the *Prākṛitic* element of Bangālī is distinguished by compounding the gen. sign. एर (*i. e.*, कर) with the *crude* base (as explained above). Hence एतक, यतक, कतक being the *crude* base, their gen. is formed (एतक + एर, etc. =) एतकेर, यतकेर, कतकेर. Next the syllable क or अक is reduced to अ (or in other words the consonant क of एतकेर, etc., is elided, thus making एतएर, यतएर, कतएर) and now a final अ and initial ए meeting, the latter (being the initial of the *enclitic* एर) is elided; thus we have एतर, यतर कतर; exactly as खेटर, वरर, etc. are formed.

Lastly as regards the *Sanskritic* and foreign elements in Bangālī, they are treated on the same principle as in Marāṭhī; that is, according to their final letter, they are treated either by the laws of the *Gaurian* or by

Prākṛit कियन्त, इयन्त, यावन्त; *in reality they are केत्त (- क), एत्त (- क) जेत्त (- क); that is, the double consonant न्त has changed to त्त. This is an extremely rare change in Prākṛit; but its probability, as shown here, is beyond doubt. Lastly केत्तक, etc. changes in Bangālī to कतक, etc.; that is, the double त्त is reduced to the simple त. Now this explains the origin of the Hindi pres. part.; *e. g.*, चलत. The corresponding part. in Sanskrit is चलत्; this becomes in Prākṛit चलन्त, this may change to चलत्त and finally to चलत. N. B. the Hindi form चलता, *oblique form* चलते presupposes a *particular* Prākṛit base चलन्तक, next चलत्तक, next चलतक). Usually a compound consonant of which one of the constituents is a nasal, can suffer no phonetic modification; hence the combination न्त as a rule, remains unchanged. There are, however, a few very isolated cases of a change of न्त to न्द in the pres. part.; *e. g.*,

माषलाशिपविद्धा विअ सग्निगडिआ दीशन्दी जेव ॥ *i. e.*

Sanskrit माषराशिप्रविष्टव मसीगुडिकां दृश्यमानैव ॥

Mrichchhakati, 1st act.

The Prākṛit commonly uses the *Parasmaipada* terminations for those of the *ātmanepada*; hence दीशन्दी represents a Sanskrit दृश्यन्ती. Now as the termination अन्त, through the modified form अत्त is the original of the termination अत् of the Hindi, Gujarātī, Marāṭhī pres. part., so through the modified form अन्द it is the original of the termination अद् of the Nepālī, Panjabī and Sindhī pres. part. The Hindi forms इतना, जितना, कितना; correspond to the Sindhī एतर जेतर, केतर. The affixes न, र are probably modern additions and correspond to the affix ल in the Gujarātī forms केटलो how many, etc.

* Compare with these their equivalents in Marāṭhī इतका, तितका, जितका, कितका, which exhibit a closer agreement even than the Hindi.

those of the *Prākritic* elements. Whenever, namely, the final of the noun is अ or a consonant (which has an अ inherent), it takes एर; in every other cases it takes र; *e. g.*, मनुष्य man has gen. मनुष्येर; बुद्धिमान् wise has gen. बुद्धिमानेर; but देवता God has gen. देवतार; सृत्तिका earth has gen. सृत्तिकार; नारी woman has gen. नारीर; पशु beast has gen. पशुर, etc.

In conclusion it may be well to recapitulate briefly the main results of the foregoing enquiry :

1. Th. Gaurian languages consist of three parts ; *a.*, the *Prākritic* ; *b.*, the *Gaurian* ; *c.*, the *Sanskritic*. Of these, speaking generally, the *Prākritic* is the oldest, then comes the *Gaurian Proper*, then the *Sanskritic*.

2. The *Prākritic* element consists of all those nouns which have come into the *Gaurian* from the *Prākrit*, and which have preserved traces of the old organic inflexion of the *Prākrit* declension ; *viz.*, the *Prākrit* nominative and genitive. The former (*i. e.*, the nom.) constitutes the inflexional base of the nominative or the *direct form* of the inflexional base in the *Gaurian* declension. The latter (*i. e.*, the gen.) constitutes the inflexional base of the remaining cases (which among themselves are distinguished by post-positions) or the *oblique form*. The distinguishing feature of the nouns of this class (*viz.*, of the *Prākritic* element) is their possession of an *oblique form*, different from the *direct form*.

Note.—Bangālī and Ūriyā are exceptional in so far as the *oblique form* of their *Prākritic* nouns is not the organic genitive, but probably the *crude* base of the *Prākrit* declension, and the apparent identity of the *oblique form* and the *direct form* of such nouns is the accidental result of phonetic modification of the *direct form*. I admit, however, another view is possible which would allow to the Bangālī and Ūriyā no *Prākritic* element at all but only *proper Gaurian*.

3. The *proper Gaurian* element consists of all those nouns which have been contributed also by the *Prākrit*, but which have not preserved any traces of the organic declension of the *Prākrit*. They have been transferred from the *Prākrit* into the *Gaurian* in the form of the *Prākrit* nom. sing., and this form constitutes their *unchangeable* inflexional base for all cases of the *Gaurian* declension, (which distinguishes the various cases among themselves by the various post-positions). The distinguishing feature of the nouns of this class therefore is their non-possession of an *oblique form* different from the *direct form*.

4. The *Sanskritic* element consists of all those nouns which have come into the *Gaurian* language *direct* from the *Sanskrit* (not through the medium of *Prākrit*) and which like the *proper Gaurian* element admit of no *oblique form* ; their *unchangeable* inflexional base being the form of the nom. sing. of the noun in *Sanskrit*.

5. The relation, accordingly, of these three different elements, one to another, is this; the *Prākritic* and the *proper Gaurian* parts agree in both receiving their nouns from the *Prākrit*, but differ in the former (*Prākritic*) admitting an *oblique form*, while the latter does not. The *proper Gaurian* and the *Sanskritic* parts agree in both not possessing an *oblique form*; but they differ in the former deriving its nouns from the *Prākrit*, while the latter receives them directly from the *Sanskrit*. The *Prākritic* and *Sanskritic* parts differ in every respect.

6. The great characteristic of the Gaurian languages in their full development, *i. e.*, after having finally separated themselves from the *Prākrit* as distinct languages by themselves, is that they do not admit an *oblique form*, but use the nom. sing. of their parent languages (*Sanskrit* and *Prākrit*) as their *inflexional base* for the formation of all cases, in other words that they do not form an *organic* declension. Hence the *proper Gaurian* and the *Sanskritic* nouns only are really Gaurian. The *Prākritic* nouns are transitional forms partaking of the character of both the *Prākrit* and the *Gaurian*.

7. Hence it follows that those Gaurian languages are most really Gaurian which contain the largest proportion of *Gaurian* elements (*i. e.*, *Gaurian Proper* and *Sanskritic*) and least of the *Prākritic* element. In this respect the Gaurian languages differ considerably among themselves. They may be divided into three classes: the *first* class contains only the *Marāṭhi*; it possesses least of the *Gaurian* element, and therefore is the most *Prākritic* of all the Gaurian languages, and represents most accurately the transitional stage between *Prākrit* and *Gaurian*. The *second* class contains all the remaining Gaurian languages, except *Bangālī* and *Urīyā*; *viz.*, *Hindī*, *Naipali*, *Panjābī*, *Sindhī*, *Gujarātī*, (*i. e.*, the *Hindī-class Gaurian* languages), they are almost entirely pure Gaurian. The *third* class contains *Bangālī* and *Urīyā*. They also are almost entirely Gaurian; if not perhaps altogether. The difference between the *second* and *third* class consists not so much in the relative amount of the *Prākritic* element which they contain, as in the nature of the *Prākritic* element as explained in No. 2, note.

8. All Gaurian nouns which have been received from the *Prākrit*, are derived either from the *general* base of the word (common to both *Sanskrit* and *Prākrit*) or from a *particular* base in क (peculiar to *Prākrit*). The final sound of the *direct form* of the inflexional base of nouns of the latter kind is not liable to phonetic corruption (except the change of ऐ to आ or ऐट), while that of the former kind is.

9. The final sound of the *direct form* of the Gaurian inflexional base (with the exceptions mentioned in No. 8) is subject to considerable phonetic corruptions. As regards those inflexional bases which are *Prākrit* nom. sing., *two stages* of phonetic corruption may be distinguished; *a.*, a *Prākrit* final

diphthong or long vowel is reduced to its constituent short vowel, *i. e.*, आ to अ, ए or ई to इ; आ or ऊ to उ; *b.*, a final Gaurian short vowel is made *quiescent*, so that all such inflexional bases appear in pronunciation and, generally, also in writing to end in a consonant or (since अ is considered inherent in a consonant) in अ. As regards those inflexional bases which are Sanskrit nom. sing., two stages also may be recognized; *a.*, a Sanskrit final visarga (or स्र) and anuswāra (or ण) is elided; and *b.*, if a final short vowel be the resultant of such elision, that vowel may or may not be made quiescent, but, as a rule, is always written.

The next essay (No. IV) will set forth the proof of the positions stated in No. 2 and No. 8, *i. e.*, that the *oblique form* of the *inflexional base* is identical with the Prakrit genitive; and that the phenomenon of the *direct form* of some inflexional bases retaining the original Prakrit termination आ, is owing to the fact, that they are derived from particular Prakrit bases, formed by means of the affix क.

APPENDIX TO ESSAY III.

On a closer examination of Naipālī I have been convinced, that the view of Naipālī taken in the preceding Essay must be somewhat modified, and that Naipālī is much more *Prākritic* than I thought at first; though I still think that its *Prākritic* element is not sufficiently strong to take it altogether out of the second class, *i. e.*, of the Hindi-class Gaurian languages. But it is next to Gujarātī the most Prakritic of that class and therefore the nearest in that respect to Marāṭhī. In this general *respect* as well as in many particular instances which I shall have occasion at different times to notice in these essays, Naipālī shows a remarkable affinity to Marāṭhī.

My observations are based altogether on a translation of the Gospel of St. Luke into Naipālī, the only Naipālī work that I have been able to procure.* The translation, I believe, was made by Missionaries; and therefore, having been made by foreigners to whom Naipālī is yet a new language, it must be used with caution. It is full of inaccuracies of spelling, and even of grammatical mistakes here and there; *e. g.*, in ch. x. 24. आ तिमिहेबले देखत कै the use of ले (= Hindi ने) is surely in-

* I have been informed by the Rev. W. Macfarlane of Darjeeling, that the only printed Naipālī Grammar is one published in 1820 in Calcutta by Lt. Ayton, of which only one copy exists in the library of the Asiatic Society. I have been unable to obtain a loan of it.

correct ; for देखत है is the present tense like Hindi देखते हैं.* Again very often consonants are spelled as compound which are in reality separated by a *quiescent* अ, as जानै instead of जानई (= Hindi जानता ; also sometimes wrongly spelled जान्ता). There is also a very inscientific principle followed in attaching the *virāṇa* to words really ending in consonants, as well as to words apparently terminating in a consonant, but in reality in some *quiescent* vowel. But as regards the phenomena which I am now about to mention, there is every reason to believe (from general Gaurian analogy) that the language of the translation is correct.

As the first observation it may be mentioned that the *Sanskritic* element of the Naipāli is, in proportion to its *proper Gaurian and Prākritic* elements considerably less than in High Hindi. In this respect Naipāli is on a level with the more cultivated *low* Hindī dialects.

In the next place the *Prākritic* element of Naipāli includes besides that class of nouns which is the common *Prākritic* element of all Hindi-class Gaurian languages, two more classes of nouns. It has been observed that all masculine nouns terminating in आ or ओ and derived through the *Prākrit* are in all Hindi-class Gaurian languages *Prākritic*. Thus Naipāli has

	<i>direct form</i>	तेरो, thine, <i>oblique form</i>	तरा
Hindī	"	तेरा	तेरे
Panjābī	"	तेरा	तेरे
Sindhi	"	तेजो	तेजे
Gujarātī	"	तेरो	तेरा

In regard to Gujarātī, the neuter nouns in उं had to be added to that class. They necessarily belong to it, as they are nothing else, but the neuter nouns corresponding to those masculine nouns in ओ. Similarly in regard to Low Hindi, the neuter nouns in औं (Braj Bhāshā) and औं (Śūra Dasās Śūra Sāgara) had to be added. In Naipāli a like addition has to be made. It possesses probably neuter nouns in औं which form an *oblique form* in आ. I have met with such a neuter, however, in a very few instances only ; and perhaps they are doubtful ;† though to judge from the fact that Naipāli

* There is also apparently great confusion as to the feminine gender. The feminine is made to terminate promiscuously in ई (like बेरी, girl), or in इ (like दिइ, given ; though *she was* is थिई not थिइ), or in ओ (like धूलो, dust, for Hindi धली or धूलि), or in आ (like सखा, fate). Now such variations are not probable in themselves, and the terminations इ, ओ, आ are contrary to all Gaurian analogy. Or are they, perhaps, all misprints for ई ?

† E. g., St. Luke x. 18, रूले शैतान् लाइ विजुली भैं खर्ग वाट खसता देख्वां. The neuter देख्वां is here used, because शैतान् is construed with लाइ, and is, therefore, accusative and not nominative to the verb. It is what the Marāṭhī grammarians call the Bhavi Prayoga, where the verb agrees neither with the subject nor the object (see Manual §. 115, 3.) ; as त्य.नें त्याला मारिलें ॥

stands in its general character on a level with the Low Hindi dialects, the existence of a neuter gender is but to be expected.

To this class of *Prākṛitic* nouns (*viz.* masculine in *आ* and neuter in *अ*) which Naipālī has in common with the other Hindi-class Gaurian languages, two further classes of *Prākṛitic* nouns are to be added. Namely, 1., a small class of nouns in *उ* which form their *oblique form* in *आ*, like the nouns in *आ*; *e. g.*, *own* in Naipālī is *आफनु* with an *oblique form* *आफना*; see St. Luke xxiv. 32. *हामिहेरु मा आफनु आफनु मन तात्तै न यो कि* = Hindi क्या हम लोगों में अपना अपना मन तपता न था; but St. Luke xviii. 14. *यो मानिस आफना घर गयो* = Hindi यह मनुष्य अपने घर को गया. All infinitives belong to this class. They have a *direct form* in *उ* but an *oblique form* in *आ*; *e. g.*, *saying* (or to say) is *भननु* but *in order to say* is *भनना निमित्त* or *भनना का लागि*; see St. Luke v. 23. *तेरो पाप माफ भयो भनि भननु कि उठेर लिउ भनि भननु कुन चाहिँ होला हो* = Hindi क्या तेरा पाप माफ हुआ ऐसा कहना अथवा उठ और चल ऐसा कहना कौन होंटा है; but St. Luke v. 24 *तिमहेरु जानौ भनना निमित्त* = Hindi इस लिये कि तुम लोग जानो, or again St. Luke xix. 4. *उ देखना का लागि रुख मा चढ्यो* = Hindi वह देखने के लिये दृष्ट में चढ़ा. 2. A class of nouns with an *oblique form* in *या*. The *direct form* would end, probably, in *आ*, but it never occurs. These nouns are never met with otherwise than in their *oblique form*; *e. g.*, *जानन्याहेरु* is *knowing (men)* = Hindi जाननेवाले; again *घचघचाउन्या का लागि उपहारिँ* is in Hindi कटकटानेवाले के लिय खोला जायगा St. Luke ii. 10; again *तिन दिन पखि उ उठन्या ह* = Hindi तीन दिन के पीछे वह उठने का ह or उठेगा. St. Luke ix. 22; again *उस को जन्माउन्या दिन पूरा भयो* = Hindi उस का जन्मवने का दिन पूरा हुआ St. Luke i. 5, 7. From these examples the following conclusions may be drawn: *a.*, these forms are *genitives*; *b.*, they are *genitives of verbal nouns* (or as commonly called *Infinitives*). These two things appear clearly from the corresponding expressions in Hindi. *c.*, according to general Naipālī analogy, the final *आ* indicates that they are *oblique forms*. It may here at once be noted that this proves the identity of the *oblique form* with the *organic genitive* of the *Prākṛit*, which these forms must be, if they are *genitives* at all. The ordinary *infinitives* end in *उ*; and it is possible that the *direct form* corresponding to these *oblique forms* in *या* also would end (if instances of it did exist) in *उ*. In that case the *infinitives* in *उ* would have two *oblique forms* in *आ* and in *या*. Their difference would be this, that the *oblique form* in *आ* is used, when the regular and proper *genitive* with the post-position *को* is to be formed (*e. g.*, *उनले मारना को आज्ञा गराइ* = Hindi उन्होंने ने मारने को आज्ञा कराई, St. Luke xxiv. 20); but the form in *या* is used, whenever the *genitive* is used *adjectively* (*e. g.*, *उ उठन्या ह* = Hindi वह उठनेवाला था). I consider it, however, more probable that the *direct form* of these *oblique forms* in *या* would end in *आ*, that, *e. g.*, to *उठन्या* the *direct form* would be *उठनो*. For these forms in *या* correspond evidently

to the Marāṭhī *oblique forms* in या of nouns in आ (for औ); thus Marāṭhī घेडा has genitive घेडयाचा. I have already observed that the Marāṭhī घेडा (and such like nouns) presupposes a Prakrit form घोडिको (or घोडिओ for घोडको). This view is confirmed by the derivation of the Naipālī उठना. It stands for a Prakrit form उठणीओ (Pr. Prak. II, 17), which would represent a Sanskrit form उत्थानीयः (from उत् + स्था + अनीय). The Prakrit genitive उठणीअस्स would be contracted in Naipālī to उठन्या. This, however, will be fully discussed in the IVth Essay. The adjective force is conveyed by the genitive. The genitive is used in this manner in all Gaurian languages. As regards Marāṭhī, see the *Manual*, §. 212, p. 132, note 1, and §. 276, note. For Panjabi, see Ludiana grammar of Panjabi §§. 43, 120. For Gujarāṭī, see Edalji's Gujarāṭī Grammar, §. 90, b. For Bangālī, see Shama Churn Sircar's Grammar p. 99, (2nd edition). In Hindi such expressions are quite idiomatic as मैं ऐसा करने का नहीं, *i. e.*, it is not my habit (or intention) to act in this manner; or this, यह वस्तु कुछ काम का नहीं, *i. e.*, this thing is useless. For some other cases of this kind, see Etherington's Hindi Grammar §. 405. In Hindi, however, in many of these cases the affix वाला (वाली fem) may also be used. This word is really a noun (as I think, the Prakrit equivalent of the Sanskrit पालक), which has merely been degraded to the position of an affix, and moreover is often a *pleonastic* addition. Its case is exactly like that of the Prakrit करको and its Gaurian (Hindi) equivalent का, as explained in Essay II, and affords an illustration of what has been said there regarding करको and का. Instead of saying मैं ऐसा करने का नहीं it would be equally idiomatic to say मैं ऐसा करनेवाला नहीं. In the latter sentence, the word करने is in reality already a genitive (*viz.* of करना; since it is the *oblique form* of it; more on this in essay IV); and as such has already all that *adjectival* force which the word करने वाला expresses. The addition of वाला is, therefore, in reality perfectly *pleonastic*, making the word करनेवाला *doubly* adjectival. The word करनेवाला in fact means exactly the same as करने का which, as explained in Essay II, is also a double adjective or a double genitive (for Prakrit करणीअस्स करयो). Hence in many Hindi phrases का and वाला are interchangeable: *e. g.*, you may say पश्चिम का देश and पश्चिमवाला देश, *i. e.*, the country of the west or the western country.

Just as the Naipālī nouns with a (conjectured) *direct form* in ओ and an *oblique form* in या correspond to the Marāṭhī nouns in आ with an *oblique form* in या, so the Naipālī nouns with a *direct form* in उ and *oblique form* in आ correspond to the Marāṭhī nouns in अ with an *oblique form* in आ. Both have reduced the Prakrit nominative termination ओ (one to उ, the other to अ) in their *direct form* and have preserved the Prakrit organic genitive in their *oblique form*. There is this difference, however, that while in Marāṭhī the Prakrit nominative termination ओ has been worn down to

its utmost limit अ (*i. e.*, from ओ to उ and from उ to अ or rather to nothing, leaving the mere consonant), in Naipālī it has been only half worn down to उ.

Besides this class of nouns in उ which are *Prākritic* for they have an *oblique form*, the Naipālī possesses also another class of nouns in उ which are *Proper Gaurian*, because they have no *oblique form*, but retain their inflexional base in उ throughout all cases. Such nouns are, *e. g.*, आफ *self* = the Hindi आप, *e. g.*, आफू लाइ र हाँमिहेरु लाइ बचा. *i. e.*, Hindi आप को और हम लोगों को बचा, St. Luke, xxiii. 39; चिन्ह *sign*, *e. g.*, कति ले एक चिन्ह साँग्या. *i. e.*, Hindi कितनों ने एक चिन्ह साँगा, St. Luke ii. 16; and especially the noun हेरु which serves as the formative of the plural; *i. e.*, जसतै यनस लोगहेरु का लागि चिन्ह भये. *i. e.*, Hindi जैसे यूँस लोगों के लिये एक चिन्ह हुआ, St. Luke, ii. 30. The final उ of these nouns is the substitute of the *Prākrit* nominative termination ओ, by the Gaurian law of reduction. In old and poetical Hindi, as I have mentioned, nouns with this termination उ are often met with. In the modern High Hindi, on the other hand, it has always worn off altogether, so that the nouns end in अ or rather in a consonant. This is the case also in Naipālī in some *Proper Gaurian* nouns, *e. g.*, घाम heat for घामु, मानिस man for मानिहु.

In conclusion I add a list of words in illustration of the above remarks.

1.—*Prākritic Nouns.*

Nom.		word	Gen.	
"	कुरो	dust	"	कुरा को,
"	धुलो	"	"	धुला को,*
"	आँखो	eye	"	आँखा को*
"	भननु	speaking	"	भनना का †
"	उठनो	rising	"	उठन्या को †

2.—*Gaurian Nouns.*

A.—*Proper Gaurian.*

Nom.		heat	Gen.	
"	घाम	man	"	घाम को ;
"	मानिस	village	"	मानिस को ;
"	गाउँ	self	"	गाउँ को ;
"	आफु	girl	"	आफु को ;
"	बेदी	light	"	बेदी को ; ‡
"	वाती		"	वाती को ; ‡

* These nouns are apparently feminine.

† The nouns in उ and ओ are perhaps neuters, and ought to be written with an anuswara (thus : उँ or ओँ). Their *Prākrit* and *Sanskrit* originals are neuters, and they correspond to the Low Hindi neuters in ऊँ and औँ and the Gujarātī neuters in ઊં.

‡ These nouns are feminine.

B.—Sanskritic.

Nom.	शब्द	word	Gen.	शब्द को ;
"	पिता	father	"	पिता को ;
"	प्रभु	lord	"	प्रभु को ;
"	साची	witness	"	साची को ;
"	स्त्री	woman	"	स्त्री को ; &c.

Beef in Ancient India.—By Bābu RĀJENDRALĀLA MITRA.

The title of this paper will, doubtless, prove highly offensive to most of my countrymen ; but the interest attached to the enquiry in connexion with the early social history of the Aryan race on this side of the Himālaya, will, I trust, plead my excuse. The idea of beef—the flesh of the earthly representative of the divine Bhagavatī—as an article of food is so shocking to the Hindu, that thousands over thousands of the more orthodox among them never repeat the counterpart of the word in their vernaculars, and many and dire have been the sanguinary conflicts which the shedding of the blood of cows has caused in this country. And yet it would seem that there was a time when not only no compunctious visitings of conscience had a place in the mind of the people in slaughtering cattle—when not only the meat of that animal was actually esteemed a valuable aliment, —when not only was it a mark of generous hospitality, as among the ancient Jews, to slaughter the “fatted calf” in honor of respected guests, but when a supply of beef was deemed an absolute necessity by pious Hindus in their journey from this to another world, and a cow was invariably killed to be burnt with the dead.* To Englishmen, who are familiar with the present temper of the people on the subject, and to a great many of the natives themselves, this remark may appear quite startling ; but the authorities on which it is founded are so authentic and incontrovertible that they cannot, for a moment, be gainsaid.

To the more learned among my countrymen the fact is not unknown that the Vedas, at one time, enjoined a ceremony called *gomedha*, or the sacrifice of cattle ; but they imagine it was typical, and did not involve the actual slaughter of the animal, and accordingly envelope it in mystery, so as to render it completely unintelligible to the uninitiated, or intelligible in a manner that takes them entirely away from the truth. When the subject attracted the attention of the late Professor Wilson, the attempt at mystifi-

* *Vide* my paper on the ‘Funeral Ceremonies of the Ancient Hindus,’ Journal, Vol. XXXIX, p. 241.

cation was so far successful that he was made to waver,* though the light of truth could not be altogether withheld from a scholar and critic like him. In a note in his translation of the *Meghaduta*, Professor Wilson said, "the sacrifice of the horse or of the cow, the *gamedha* or *as'amedha*, appears to have been common in the earliest periods of the Hindu ritual. It has been conceived that the sacrifice was not real, but typical; and that the form of sacrificing only was performed upon the victim, after which it was set at liberty. The text of this passage, however, is unfavorable to such a notion, as the metamorphosis of the blood of the kine into a river certainly implies that blood was diffused. The expression of the original, literally rendered, is 'sprung from the blood of the daughters of Surabhi' that is, kine, Surabhi being a celebrated cow produced at the churning of the ocean, and famed for granting to her votaries whatever they desired. 'Daughter of Surabhi' is an expression of common occurrence, to denote the cow."† This argument of the learned Professor, however, had suggested itself to the people of this country long before his time, and it was met by some by the assertion that the word blood had been used only to complete the metaphor of the sacrifice. Others more amenable to the plain meaning of the old texts, but at the same time more daring, assume that the animals so sacrificed were immediately after invariably revived by the supernatural powers of the sacrificers. Such a line of argument, however satisfactory to the pious proletariat, takes the question so entirely out of the domain of reason, that it may fairly be left to itself; but even the orthodox Hindu might fairly ask, how it is then that the venerable old poet and hermit Vālmiki, when preparing to receive his brother sage Vas'ishṭha, the author of one of the original law books (*Smṛitis*) which regulates the religious life of the people, and a prominent character even in the Vedas, slaughtered a lot of calves expressly for the entertainment of his guests? The revivification in that case must have followed the consumption of the meat of the slaughtered animals by them. The passage in which Vālmiki's preparation for the reception of Vas'ishṭha is described in the *Uttara-rāma-charita* is so remarkable, that I need not offer any apology to quote it entire. The scene is laid in front of the hermitage of Vālmiki, where two disciples of the sage discourse on the bustle within.

"*Bhāṇḍāyana.* Behold, Sandhataki, our humble dwelling!

Vālmiki's holy hermitage assumes

The face of preparation; he expects

Unwonted guests to-day; the wild deer feed

* This was, however, done at the early part of his Sanskrit studies, when he had not come to the fountain-head, and was obliged to depend on his pandits. Subsequently he had no doubt whatever on the subject. Vide his note in the *Uttara Rāma Charita*, *Hindu Theatre*, I. 34.

† *Essays* II., p. 353.

Upon unusual fragments, and the air
Is filled with savoury odours.

Saudhātaki. There must be
Some wondrous cause, to make our grey beards lay
Their lectures by to-day.

Bhān. There is a cause,
And that of no mean import.

Sau. Tell me, I pray you,
What venerable ox may we expect
To visit us ?

Bhān. For shame ! refrain from jests :
The great Vas'ishṭha hither brings the queens
Of Das'aratha, with Arundhatī,
From Rishyas'ringa to our master's dwelling.

Sau. Vas'ishṭha is it ?

Bhān. The same.

Sau. I crave his pardon. I had thought, at least,
It was a wolf or tiger we should look for.

Bhān. How so ?

Sau. Why else was there provided
The fatted calf for his regale ?

Bhān. Why, know you not,
The Vedas, which enshrine our holy law,
Direct the householder shall offer those
Who in the law are skilled, the honied meal
And with it flesh of ox, or calf, or goat,
And the like treatment shall the householder
Receive from Brāhman learned in the Vedas.*"

Vas'ishṭha, in his turn likewise, slaughtered the "fatted calf" when entertaining Vis'vāmitra, Janaka, Satānanda, Jāmadagnya and other sages and friends, and in the *Mahāvīra Charita*, when pacifying Jāmadagnya, tempted him by saying : "The heifer is ready for sacrifice, and the food is cooked in ghee. Thou art a learned man, come to the house of the learned, favour us (by joining in the entertainment)."[†]

These are, doubtless, examples quoted from avowed fictions, but it is not to be supposed for a moment that their authors would have alluded to such

* *Hindu Theatre* I, 339. This rendering is a little too free, but the main facts remain unaltered. For a literal translation of the passage, see Mr. Tawney's version of the work, Act IV.

† सञ्जयते वत्सतरो सर्पिषन्नश्च पच्यते ।

आचियः आचियद्दानागतोऽसि जुषस्व नः ॥ अ० ३ ।

a subject, and offended the feelings of their readers, had they not ample authority to be satisfied that their readers would go with them.

Colebrooke noticed the subject in his essays on "the Religious Ceremonies of the Hindus," in which he says, "it seems to have been anciently the custom to slay a cow on this occasion, (the reception of a guest) and a guest was therefore called a *goghna* or 'cow-killer.'*" When noticing the mantra for the consecration of the cow at the marriage ceremony, he observes: "The commentator whose gloss has been followed in this version of the text, introduces it by the remark, that a guest, entitled to honorable reception, is a spiritual preceptor, a priest, an ascetic, a prince, a bridegroom, a friend, or, in short, any one to welcome whose arrival a cow must be tied for the purpose of slaying her; whence a guest is denominated *goghna*, or cow-killer."†

Mann authorises the consumption of animal food at all seasons with the slight restraint of first offering a bit of it to the gods, or manes, or guests. He says, "having bought flesh meat, or obtained it by aid of another, he who eats it after worshiping the gods or manes commits no sin." v. 32. But he does not expressly name beef as an article of food. In his list of animals fit for human food he, however, observes; "the hedge-hog and porcupine, the lizard *godhā* (*Guaia*) the *gandaka* (rhinoceros) the tortoise, and the *rabbit* or hare, wise legislators declare lawful food among five-toed animals, and all quadrupeds, camels excepted, which have but one row of teeth."‡ And this would include cows which were well known to him as animals having one row of teeth. Had he wished to exclude them, he would have for certain thought of them, and linked them with camels. It is, however, not necessary to infer what he intended by such a line of argument, as he is quite explicit in his directions about the use of beef on the occasion of a Brahmaçārī's return home. He says: "Being justly applauded for this strict performance of his duty, and having received from his *natural or spiritual* father, the sacred gift of the Vedas, let him sit on an elegant bed, decked with a garland of flowers, and let his father honour him, before his nuptials, with the present of a cow, according to the *Madhuparka* rite."§ In a subsequent passage|| he recommends the *Madhuparka* or the "honeyed meal" with beef for the reception of kings and other great dignitaries.

Asoka, who in his first edict, says "formerly in the great refectory and temple of the heaven-beloved king Piyadasi, daily were many hundred thousand animals sacrificed for the sake of meat food,"¶ does not specify the kind

* Asiatic Researches VII, 288.

† Ibid VII, 289.

‡ Mann V., 18.

§ Ibid III, 3.

|| Ibid III, 119-120.

¶ Journal, Vol. VII, p. 249.

of animals which were slaughtered, but, bearing in mind that when the animals were sacrificed he was a Hindu, and followed the ordinances of the Śāstra, it is to be presumed that he did not confine himself to the meat of kids and sheep.

The Mahābhārata and the Rāmāyana allude to the *gomedha* or slaughter of cattle for sacrifice; but they do not afford any details, nor is it clearly mentioned that bovine meat was used as food.

The Sūtras, both Kalpa and Grihya, and the Vedas themselves, however, display no such reserve or reticence. They distinctly affirm that bovine meat was used as food, and in detail point out the different occasions when cattle should be slaughtered and eaten.

In the Brahmana of the Black Yajur Veda, that grand store-house of Vedic rituals, which afford the fullest insight into the religious life of ancient India, mention is made of scores of different ceremonies, which required the meat of cattle for their performance, and considerable stress is laid on the kind and character of the cattle which should be slaughtered for the supply of meat for the gratification of particular divinities. Thus, among the *Kāmya Ishṭis*, or minor sacrifices with special prayers (B. III, c. viii), we have to sacrifice a dwarf ox to Vishnu; a drooping-horned bull with a blaze on the forehead to Indra as the author of sacrifices, or as the destroyer of Vītra; a thick-legged cow (*prishvaisakṭha*) to the same as the regent of wind; a white-blazed drooping-horned bull to the same, as the destroyer of enemies, or as the wielder of the thunderbolt; a barren cow to Vishnu and Varuna; a cow that has lately miscarried to Aushadhayah; a bull that has been already sanctified at a marriage or other ceremony to Indra and Agni; a polled ox to Brahmanaspati; a black cow to Pushan; a cow that has brought forth only once to Vayu; a brown ox to Indra, the invigorator of our faculties; a speckled or piebald ox to Savita; a cow having two colors to Mitra and Varuna; a red cow to Rudra; a white barren cow to Sūrya; a white ox to Mitra; a cow that has miscarried from taking the bull unseasonably to Vāyu; a cow fit to conceive to Bhaga, &c., &c. In a rule in connexion with the As'vamedha, the same authority lays down that sacrificial animals should differ in caste, colour, age, &c., according to the gods for whom they are designed.*

In the larger ceremonies, such as the Rājasuya, the Vajapeya, and the As'vamedha, the slaughter of cattle was an invariable accompaniment. Of the first two, the *Gosava* formed an integral part, and it ensured to the performer independent dominion in this world, and perfect freedom in the next to saunter about as he liked, even as the cow roams untrammelled in the forest.†

* Taittirīya Brāhmaṇa, III, p. 658.

† यथा गौः अरण्ये ख कन्दचारी, एवमयं ब्रह्मलोकं पि खतन्त्रो भवति । Taittirīya Aranyaka.

In its account of the As 'vamedha, the Taittirīya Brāhmaṇa recommends 180 domestic animals to be sacrificed, including horses, bulls, cows, goats, deer, Nilagāos,* &c. A number of wild animals were, likewise, on such occasions, brought to the sacrificial posts, but they were invariably let loose after consecration. The authority, however, does not distinctly say how many heads of cattle were required for the purpose; the number perhaps varied according to the exigencies of the guests among whom crowned heads with their unwieldy retainers formed so prominent a part, and whose requirements were regulated by a royal standard. But even the strictly ceremonial offering was not, evidently, completed with a solitary cow or two. Out of the "ten times eighteen" heads required, a great many must have been bulls, cows and heifers of diverse colors and ages.

The Brāhmaṇa notices another ceremony in which a large number of cattle were immolated for the gratification of the Maruts and the enjoyment of their worshipers. This was called the *Pañchas'ārādīya saca*, or the "quinquennium of autumnal sacrifices." It evidently held the same position in ancient India which the Durgāpūjā does in the liturgy of the modern Hindus. It used to be celebrated, as its name implies, for five years successively, the period of the ceremony being limited to five days on each occasion, beginning with the new moon which would be in conjunction with the Viśākhā constellation. This happened in September or October. The most important elements of the ceremony were seventeen five-year old humpless dwarf bulls, and as many dwarf heifers under three years. The former were duly consecrated, and then liberated, and the latter, after proper invocations and ceremonial observances, immolated; three on each day, the remaining two being added to the sacrifice on the last day, to celebrate the conclusion of the ceremony for the year. The Tāndya Brāhmaṇa of the Sāma Veda notices this ceremony, but it recommends cattle of a different color for each successive year. According to it the 7th or 8th of the waxing moon in Ās'vina for the first year, and the 6th of Kārtika for the following years, as the most appropriate for it.† The origin of the *Pajña*, according to a Vedic legend, is due to Prajāpati. Once on a time he wished to be rich in wealth and dependents; "he perceived the Pañchas'ārādīya; he seized it, and performed a sacrifice with it, and thereby became great in wealth and dependents." "Whoever wishes to be great," adds the Veda, "let him worship through the Pañchas'ārādīya. Thereby, verily, he will be great."‡

* तस्मादष्टादशिनो रोहितो धूमरोहित इत्यादिभिरनृवाकैरुक्ताः प्रत्यनृवाकमष्टादश-
सङ्ख्या मिलित्वाऽशीत्यधिकशतमङ्गुलाः पशव आलभ्यन्ते । Taittirīya Brāhmaṇa II, 651.

† यथा० शरदि कान्तिके मासि यजेत । सप्तम्यासष्टम्यां वाच्ययुजोपदे तु वत्सतरीरेवा-
लभेरन् उक्तो विद्वज्युः । ६४२ ।

‡ Tait. Brāhmaṇa, II, 2.

Elsewhere it is said that this ceremony ensures thoroughly independent dominion, and that a sage of the name of Kandama attained it through this means.*

In the *Asvalāyana Sūtra* mention is made of several sacrifices of which the slaughter of cattle formed a part. One of them in the *Grihya Sūtra* is worthy of special notice. It is called *Sūla gava* or "spitted cow," i. e., Roast Beef. It was performed either in the autumn (*sarat*), or the spring season; when the moon was in the constellation *Ārdra*.† The animal appropriate for it was a cow of other than fawn color, spotted with white,‡ and the choicest of the fold.§ Black spots were, however, not deemed objectionable,|| and a uniform black or blue color with a dash of red in it, i. e. of a purplish tinge was reckoned unexceptionable.¶ As soon as such an animal was selected, it was bathed with water in which paddy and barley had been steeped, and let loose,** as long as it did not attain all its permanent teeth, being all the while kept dedicated to Rudra, by a Vedic mantra which says, "May you thrive in the name Rudra the great god, &c."††

The proper place for the sacrifice was an unfrequented spot, outside, and to the east or the north, of a village or town, whence the village was not visible, nor was it visible from the village. The time was after midnight, but some authorities preferred the dawn.‡‡

All the necessary arrangements being complete, the priest, a Brāhman versed in the details of the sacrifice and experienced by former performance of it,§§ should begin the ceremony by making certain offerings to the fire with appropriate mantras, and then plant a sacrificial post of the usual size, but of a green palāśa branch, uncarved and unadorned, the practice in other

* खाराज्यं वा एष यज्ञः । एतेन वा एकयावा कान्दमः खाराज्यमगच्छत् । खाराज्यं गच्छति । Taittirīya Brāhmana II, 781.

† भरदि वसन्ते वार्द्रया । ४, ९, ९ ।

‡ अकुष्ठिष्ठत् । ४, ९, ४ ।

§ गृहं खस्य यूयस्य । ४, ९, २ ।

|| कल्माषमित्येकं । ४, ५ ।

¶ कामं दृष्मालोचवायत् । ४, ९, ६ ।

** ब्रौह्मिववन्तीभिरद्भिरभिषिच्य । ४ । ६, ७ ।

†† रुद्राय महादेवाय जुष्टो वर्ज्येति । ४, ९, ९ ।

I am not sure whether the Rudra in this passage should be the noun, and Mahādeva "great god," adjective, or the latter the noun, and Rudra "fierce" the epithet. In the present day animal sacrifices are rarely offered to Mahādeva, To Sarasvatī, likewise no meat offering is now made, though the Vedas enjoin it repeatedly.

‡‡ ऊर्द्धमङ्गरावात् । उदित इत्येके । ४, ९, १९ ।

§§ For obvious reasons this condition could not have been invariably carried out.

ceremonies being to carve and decorate the post (Yūpa) very elaborately. Two pieces of string are now to be provided, one made of kūs'a grass, and the other of a kind of creeping palāśa, *eratuli*. One of these is tied round the post, and the other to the right horn of the victim, which is then attached to the post facing the west; each of these operations being performed while repeating a mantra. The animal being then immolated in the usual way, an offering is made to the fire with the liver held in a vessel made of palāśa wood or leaves. The mantra for the purpose is formed of the twelve names of Śiva thus:—“To Hara, Mṛdha, Śārva, Śīva, Bhava, Mahādeva, Ugra, Bhīma, Paśūpati, Rudra, Śaṅkara, and Isāna, may this be welcome.”* It is, however, optional with the priest to repeat the whole of this mantra, or only a part of it including the last six names, or simply to say “to Rudra, may this be welcome.” Offerings of cooked rice and other articles being now made, four bundles of kūs'a grass are spread on the four sides of the altar, and a little cooked rice and some beef are offered to Rudra as the regent of the four quarters. This is followed by four mantras addressed to Rudra from the four quarters. The husks (*tusha*) and broken grain (*kunda*) of the rice used in cooking the rice offering, together with the tail, hide, tendons and hoofs of the victim are then to be thrown into the fire, and the effused blood, which at the time of immolation was held in a vessel, should be thrown on bundles of kūs'a grass. At a time when the people knew not how to utilize bovine hair and hoofs, their burning was a matter of course, but the destruction of so useful an article as hide was not in keeping with the views of the Benthamites of the day; accordingly Sambatya, a sage, recommended that it should be made subservient to human use, by being manufactured into shoes and the like.† The priest is then to stand up, facing the north, and, covering his face with a cloth, repeat a mantra offering the blood which had been spilled on the ground at the time of sacrifice to serpents to whom it belongs. The final offerings (*srishṭakrit*) are now made, and the spit being removed from the chest of the victim, the ceremony is concluded by an address to Rudra in praise of his greatness. The remains of the ceremonial offerings, says the Sutrakāra, should not be admitted into the village, nor children be permitted to approach the sacrifice. But the sacrificers should, says the text, “eat of the oblation in the usual way, after the benediction (*śeustayana*).”‡ Some forbid this consumption of the beef, others make it optional.§

* हराय मृद्वाय शर्वाय शिवाय भवाय महादेवाय भीमाय पशुपतये उग्राय भूमाय भूतनाथाय स्वाहा । ४, ९, १० ।

† भोगं चर्मणा कुर्वीतति शर्वतयः । शर्वतयस्वाचार्यः चर्मणा भोगमुपानदादि कुर्वीतेति मन्यते । ४, ९, २४ ।

‡ नियोगात् प्राश्नीयात् सख्ययन इति । ४, ९, २५ ।

§ अस्म्य पश्नाः ऊतशयं न प्राश्नीयात् । अन्यत्र इच्छातः प्राश्नीयात् वा । ४, ९, २२ ।

The ceremony ensures to the performer long life, wealth, high position, great religious merit, and numerous herds and children; and every householder is required to perform it at least once in course of his life; it being reckoned among those which must be performed. A modified form of this ceremony is recommended to be performed in a paddock, where cattle are piquetted at night, should a murrian break out in the fold.

It is to be regretted, that the account of the ceremony given in the Grihya Sūtra, though full in other respects, is entirely silent as to how the meat of the animal is to be cooked. The use of the spit or skewer and its presence in the chest of the victim whence it is to be withdrawn at the conclusion of the ceremony, leaves little doubt, however, as to the manner in which the meat was dressed.*

The next ceremony I have to notice is named *Gavīmanayana*, or the sacrifice of the cow, otherwise called *Ekishṭaki*. It was held for four days on the eighth of the wane in the month of Māgha, or for four days, either immediately before, or immediately after, the full moon of Phālguna or Chaitra. Its details are in many respects similar to that of the ordinary *Pasubandha*, of which some account will be given below. It seems to have formed a part of the *Mahāpaya*, *Drādasāha* and other ceremonies, and not to have constituted a distinct ceremony by itself.

Several other ceremonies also required a supply of beef for their consummation. In connexion with the Atirātra ceremony *Kātyāyana* recommends the sacrifice of a barren cow (a spotted one being preferred)† to the Maruts, and seventeen, black, polled, entire oxen to Prajapati, permission being granted to dispense with one or two of the characteristics if all the three cannot be secured‡. I have not yet been able to obtain a *Prayoga* for the performance of any of these ceremonies, and am not, therefore, in a position to supply all the details which were observed in performing them. I have, however, got three short *Prayogas* for the performance of the *Nirāḍa pasubandha*, from one of which (MS. No. 1552, Sanskrit College of Calcutta) I have compiled the following abstract of the ceremony.

This ceremony should be performed during the six months of the northern declension of the sun, when the moon is waxing in one of the Deva-

* ततः स्विष्टकृदादिहृदयशूलोद्वासनसंचितं होमशेषं समापयेत् । आश्वलायनगृ०-
सू० वृत्तिः ४, ९, २९ ।

† अतिरात्रपशूनुपाकृत्य वशां प्रश्निं मरुद्भा उज्जयेभ्यः ॥ का० श्रौ० सू० १४, २, ११ ।

पूर्वं चतुरोतिरात्रपशूनाग्नेयादीनुपाकृत्य वशां बन्धां प्रश्निं विचित्रवर्णमुपाकरोति ।

‡ तदभावेऽष्टाश्वम् ॥ का० १४, २, १२ ॥

प्राजापत्यांश्च सप्तदश श्यामवूपरान् बसान् ॥ का० १४, २, १२ ॥

श्यामाश्च ते वूपराश्च श्यामवूपराः तान् वूपरान् शुद्धहोतृनां बसान्मुष्करान्
साष्टान् प्रजनयिष्यन् ।

nakshatras, or on the day when the moon is in the constellation Revati, or on the day of the new moon. On the day preceding the ceremony, the performer should celebrate the s'rāditha called *Nāndimukha*, and at night observe the *Udakas'ānti* and the *pratisara-bandha*. The first consists in sprinkling holy water with appropriate mantras on the householder, and the latter in tying a thread on the right wrist in a prescribed form to serve as an emblem of engagement, to be kept on until the completion of the ceremony for which it is tied. In Bengal this thread is now tied only on the occasion of a marriage or the investiture of the sacrificial thread; but in the North-West it is used for several other ceremonies.

On the day of the ceremony, the first duty is to attend to the five obligatory duties of bathing, offering of water to the manes, reading of the Vedas, offering of oblations to the household fire, giving of alms to beggars, and cooking of rice for the Vaisya-devāh.* The animal to be sacrificed is then to be thought of, while repeating the mantra beginning with the word *Prīyatam*, &c. Proceeding then to the Garhapatya fire the institutor and his wife should sit beside it on kūśa grass, holding at the same time a bundle of that article in their hands, and then thrice inaudibly and thrice loudly repeat a mantra, and, having duly ordained the priests, solemnly resolve to perform the ceremony. The Adhvaryu should now come forward, produce in due form the sacrificial fire by briskly rubbing two pieces of wood against each other, sanctify it by proper mantras, light the Ahavīnya fire altar, and thereon offer oblations of clarified butter. If the fire used be an ordinary one, and not produced by friction, a different form of sanctification, is to be adopted to that recommended in the first instance. The oblations, however, are the same, and they are five-fold, the last two being in favor of the sacrificial post and the axe with which it is to be cut.

Now proceeding by the eastern gate, the institutor should proceed to the tree from which the post is to be cut out. There, standing before the tree with his face to the west, he should address a mantra to the tree, and then anoint its trunk with a little sacrificial butter. The post being subsequently cut, a piece of gold is to be put on the stump, a little water is to be sprinkled thereon, and four offerings of butter made to it.

The post should be five *aratnis* and four fingers long, each *aratni* being equal to about 16 inches, that is, of the length of the forearm from the inner condyle of the humerus to the tip of the little finger. From nine inches to a foot of the lower end of the post should remain unshorn for the purpose of being buried in the earth; but above that the shaft should be pared and made either octagonal, or square. The top, to the extent of four

* पाठो होमस्यान्तिथीनां सपर्या तर्पणं बलिः ।

एते पञ्च मन्त्रायज्ञाः ब्रह्मयज्ञादिनामकाः ॥

fingers, should be cut into the form of a tenon, whereon is to be fixed a round wooden band or ferule, for regulating the proportion of which as also for the various operations of cutting, chiselling, scraping, appropriate mantras are provided. The shavings should be collected, partly for the cooking of frumenty, and partly for fixing the post in the earth.

The place where the post should be fixed has next to be determined. For this purpose, a peg is to be fixed in front of the *Āhavaniya* fire at the distance of two feet from its northern edge. Proceeding northwards twelve feet therefrom, a second peg is to be fixed, and then taking a piece of string 18 feet long and having a loop at each end, it is to be fixed to the fore peg, and then, drawing it tight at the thirteenth feet, a third peg is to be fixed, a hole being dug between it and the peg at the twelfth feet, and another at the fourteenth feet. The string being now drawn towards the south, pegs are to be fixed as above. These opposite points are called the *s'roni*, or the hips of the altar. The string is next turned to the east and west successively, and pegs fixed at the distance of fourteen feet on each side from the centre. These constitute the two shoulders of the altar (*skandha*). To the west of the twelfth feet peg, eight inches of space should be kept for the post, and beyond it a peg should be fixed to mark the boundary of the spot. Beyond it, in a straight line at the distance of a yoke-pin, another peg is to be fixed, and beyond it a square altar of the length and height of a yoke-pin should be made similar to the *Āhavaniya* altar. This is called the *Uttara-vedi*. Upon this there should be another, a span square and four fingers or a span high, having a depression in the centre like a foot-mark. This is the northern naval, *Uttaranābhī*. Measuring two or three feet straight to the west of the altar pin, and then turning to the north two or three feet, a hole is to be dug of the size of a yoke-pin. This is called *Chitrila*. Measuring again four feet straight to the west of the altar, and then turning to the north one foot, a peg is to be fixed marking the place of the *Utkara* or refuge field.

The *Yajamāna* now sheds his hair, rubs butter on his body, ornaments his eyes with collyrium, and then eats something, leaving the next operations of the ceremony to be performed by the priests.

The first duty of the *Adhvaryu* priest is now to cut two plaksha branches (*Ficus infectoria*), and to arrange all the different articles required for the sacrifice, including among other things a peg of Gambhari wood (*Gmelina arborea*) of the length of the *Yajamāna*'s face for driving it into the victim's chest. *Kāś'maryanayam hridaya-s'ulam yajamāna-mukha-sammitam*. Now follows a series of offerings to the different sacred fires, and the repetition of a number of mantras by the different priests, the *Yajamāna* and his wife, which, however important in a ceremonial point of view, are neither likely to interest the public in the present day, nor to contribute to throw any

light on the subject of this paper. I shall pass on, therefore, to the details connected with the treatment of the sacrificial animal.

On the conclusion of the different offerings above referred to, the victim should be brought forward, rubbed over with a paste of turmeric, emblic myrobolan and oil, well washed, and then led between the *Chátrala* and the *Útkara*, to a spot between the *Áhavaníya* fire and the sacrificial post, and there made to stand before the latter, facing the west. The animal should be of the colour appropriate for Indra and Agni, for the whole ceremony is addressed to them. But should one of that colour be not available, any sound ox may be employed, provided it be not defective by reason of having only one horn, or bored ears, or broken teeth, or docked tail, or being dwarf, deaf, mangy, or undivided-hoofed.

After the bathing the Adhvaryu should offer certain expiatory oblations with the *nilgíjja*, *sthálgíjja*, and *casáhomá havani*, in course of which he should invoke Agni, Indra, Váyu and Prajapati. Then taking a bit of kus'a grass he should place the same with the aid of the Yajamana, on the head of the victim between the horns, while repeating the first verse of the Yajur Veda, *Íś'etrá* &c. This is called *Úpákaraga* or emblematic sacrifice. It is to be followed by the repetition of certain mantras declaratory of the resolution to sacrifice the animal.

Other mantras now follow, accompanied with offerings to the different fires, and repeated manipulations of the sacrificial vessels. These done, the animal is tied by the right horn, the rope passing two or three times round the eye of that side, so as to leave the left horn free. A little water is then sprinkled on the victim, which is allowed to have a good drink of water from a vessel brought near it for the purpose. An offering of butter to the fire with the *ś'ruk* spoon is next made, and with the remainder of the sanctified butter in the spoon, spots are marked on the forehead, the hump, and the two hind quarters. Another series of mantras and offerings having been gone through by the Adhvaryu, an axe is placed in the hands of the immolator, a spike stuck into the string with which the victim is tied, and the victim is anointed with some butter. These operations accomplished, the Agnidhra takes up a flaming brand from the *Áhavaníya* altar, and proceeding between the *Chátrala* and the *Útkara* to the front of the *Sámitra* fire, thrice circumambulates the victim by the right side with the brand in his hand, and then, placing the brand near the *Áhavaníya* altar, repeats the circumambulation, while the Adhvaryu offers an oblation after every turn, and then continues his offerings to Prajapati Agni, Váyu, and Vis'vedevah. The Pratiprasthata now comes forward, and taking some burning charcoal from the *Gárhapatya* altar, removes it to the *Sámitra* altar. The victim is then led northward between the sacrificial post and the northern altar by the Agnidhra with a flaming brand in his hand, and the Adhvaryu and the Yajamana touch it with the vessel intended

for holding the liver (*capāśrapamī*). The former next sanctifies the animal by a mantra, and the Agnidhra places before the immolator the burning brand which is cast aside by the Adhvaryu, who orders the immolation with an appropriate mantra ending with the word *sañjāpaya* "immolate." The immolator now casts the animal on spread kusa grass so as to have its head towards the west, and the feet pointing towards the north, and completes the slaughter, saying at the end "it is immolated" (*sañjāpta*). The institutor of the sacrifice and the priests should sit during the operation with their faces averted, so as not to behold the sanguinary work, and the Adhvaryu should go on making expiatory offerings to obviate the evils likely to arise from the victims howling, or shivering, or attempting to run away, or dying by natural causes during the ceremony. A number of mantras, mostly from the Sañhitās of the Rig and the Yajur Vedas are given for the various operations and offerings mentioned, as also for an interminable and unsufferably tedious series of offerings which are to follow the immolation; but it would be foreign to the subject of this paper, to describe them here. I must, therefore, refer the curious to the MS. from which these details have been taken.

That the animal slaughtered was intended for food, is evident from the directions given in the *Āśvalīyana Sūtra* to eat of the remains of the offering; but to remove all doubt on the subject I shall quote here a passage from the *Taittirīya Brāhmaṇa*, in which the mode of cutting up the victim after immolation is described in detail; it is scarcely to be supposed that the animal, would be so divided if there was no necessity for distribution. The passage runs thus: "celestial and human executioners, (*Samitāra*) commence your work; carry the victim for the purpose of cutting it up. Anxious to divide the victim for the masters of the ceremony, collect the *almuka* fire for the animal brought here (to the shambles). Spread the kusa grass; obtain the permission of the mother, of the father, of the uterine brother, of the friendly members of the herd of the victim. Place it so that its feet may point towards the north; let the eyes reach the sun; let its vital airs attain the regent of the wind; let the ears attain the regents of the quarters; let its life reach the ether above; let its body abide on the earth. Separate its hide so that it may remain entire (without rents). Before cutting open the naval separate the fat. Close its breath that it may remain within; (*i. e.* by tying up the mouth). Cut open its breast so as to make it appear like an eagle (with spread wings). Separate the forearms; divide the arms into spokes; cut out the shoulders (clods) in the form of tortoises; remove the hips (rumps) so as not to injure them; divide the thighs (rounds) with the bone entire in the shape of a door, or of the leaf of the oleander; separate successively in order the 26 ribs; divide the different members so that none be less than what it should be. Dig a trench for burying the

excrements. Throw away the blood to the Rakshasas. Extract entire (and do not puncture in the middle) that part of the entrails which is like an owl in shape (the stomach, *vanishṭu*). Your offspring and their children will live in peace and never weep (*i. e.* these operations being done according to the ordinances of the *sāstra*, no injury will befall your family). O slayer of cattle, O Adhrigu, accomplish your task ; accomplish it according to rules ; O Adhrigu, accomplish it.*

The Taittiriya Brāhmaṇa is silent as to what should be done with these different parts, but the Gopatha Brāhmaṇa of the Atharva Veda supplies the omission. It gives in detail the names of the different individuals who are to receive shares of the meat for the parts they take in the ceremony. The total number of shares into which the carcass is to be divided is thirty-six, and the following persons are to receive one or more shares each, *viz.* :—

“The Prastātā is to receive the two jaws along with the tongue ; the Pratihartā, the neck and the hump ; the Udgātā, the eagle-like wings or briskets ; the Adhvaryu, the right side chine with the shoulder ; the Upagātā, the left chine ; the Pratiprasthātā, the left shoulder ; the Brāhmā and the wife of the Rathyā, the right rump ; the Brāhmaṇāchekhaṇsi, the right hip lower down the round ; the Potā, the thigh (leg ?) ; the Hoti, the left rump ; the Maitrāvaruṇa, the left round ; the Achekhāvāka, the left leg ; the Neshtā, the right arm (clod) ; the Sadasya, the left clod ; the master of the house the sirloin and some part of the abdomen (flank ? *sada* and *anuka*) ; his wife, the loin or pelvic region, which she is to bestow on a Brahman ; the Agnidhra, the stomach (*vanishṭu*), the heart, the kidneys, and the right fore leg (*vāhu*) ; the Atreya, the left leg ; the householder who ordains the sacrifice, the two right feet ; the wife of the householder who ordains the sacrifice, the two left feet ; and both of them in common, the upper lip ; the Grāvasat, three bones of the neck, (vertebra) and the *manirjā*, whatever that be ; the man who leads the cow, three other vertebrae and a half of the perineum ; the Chamasādhvaryu, the bladder ; the Subrahmanya, the head ; the man

* “द्विधाः शमितार उत मनुष्या चारभध्वं । उपनयत मेध्या दुरः । आशमाना मेध-
पतिभ्यां मेधं । प्रास्त्रा अग्निं भरत । स्तूणीत वर्हिः । अन्वेनं माता मन्यतां । अनु पिता ।
अनु धाता सगर्भः । अनु सखा मयूथः । उदीचीनाः अस्य पदा निधत्तात् । स्तूयं
चक्षुर्गमयतात् । वार्तं प्राणमन्ववष्टजतात् । दिशः श्रोत्रं । अन्तोक्षमसुं । श्रियिवाः
शरीरं । एकधास्य त्वचमाच्छ्रतात् । पुरा नाभ्या अपिशशो वपासुर्ताखदनात् । अन्तरेवा-
स्याणं वारयतात् । श्वेनमस्य वक्तः कृणतात् । प्रशमा बाह्वः । भस्त्रा दाशणी । कश्यपेवाः सा ।
अच्छिद्रे श्रोणी । कवषोरु स्तेकपर्णाष्टावन्ता । षड्विंशतिरस्य वङ्कयः । ता अनुष्टुप्चावय-
तात् । गात्रं गात्रमस्यानूनं कृणतात् । जवध्वंगाच्चं पार्थिवं खनतात् । अस्त्रा रचः स-
खजतात् । वनिष्टुमस्य माराविष्ट । उरुक्तं मन्यमानाः । नेद्वलोके तनये । रविता रव-
क्षमितारः । अभिगो समीध्वं । सुशमि शमीध्वं । शमीध्वमभिगा ” इति ।

who invites people to a Soma sacrifice, the hide.”* Diverse imprecations are hurled against those who venture to depart from this order of distribution.

The luckiest recipients were no doubt those who got the tongue, the hump, the rounds, and the sirloin ; but some of the inferior officers, such as those who got the feet, the bladder, and the like, could have made but poor use of their shares. They were, however, all allowed plentiful libations of the Soma beer to wash down their meat.

The general rules to be followed in slaughtering animals including cattle, are given by some of the Sūtrakāras. They are of course liable to be modified by special rules in connexion with special ceremonies, but in the absence of any such special rule, they should be regularly followed. Āsvalāyana gives these rules under the head of *Pasūkalpa* in the eleventh section of the first book of his Grihya Sūtra. According to them, after offering oblations of clarified butter to the sacrificial fire, a hearth is to be made to the north of it, for the *Sāmītra* or cooking fire. This done, the animal to be slaughtered is to be made to drink plentifully, then bathed, and then made to stand before the sacrificial fire, facing the west. After this two oblations of clarified butter are to be offered with the mantra beginning with the words *Dūtām*, &c. The animal should then be touched on the back with a green branch bearing leaves while announcing the resolution, “for the gratification of so and so (naming the god), I slaughter thee.” A little water in which paddy and barley have been steeped, is now to be sprinkled on the forepart of the animal, and the aforesaid resolution again repeated. This done, the animal is to be made to drink a part of that water, and the remainder of it is to be thrown on its right fore leg. It is then to be led round the fire three times silently without any mantra, and then carried to the north side, with a burning faggot held before it. When brought to the spot where the cooking hearth has been made, the faggot is to be put into the hearth, and a good fire kindled in it. The master of the ceremony

* ज्यथातः सुवनीयस्य पश्चाद्विभागं व्याख्यास्यामः । उद्धृत्यावदानानि, इन् सजिह्वे प्रक्षोतुः, कण्ठः सकाकुदः प्रतिहर्तुः, श्येनं पक्ष उद्गातुः, दक्षिणं पार्श्वं सांसमध्वर्याः, सव्यमुप-गादृणां, सव्योऽसः प्रतिप्रस्थातुः, दक्षिणा अग्निरथ्या स्त्री ब्रह्मणः, अवरसकथं ब्राह्मण-अग्निनः, ऊरुः पातुः, सव्या अग्निर्योतुः, अवरसकथं नैवावरणस्य ऊरुश्चावाकस्य, दक्षिणा दोर्नयुः, सव्या सदसस्य, सदश्चानूकक्ष गृहपतेः, जाघनो पलगाः, तां सा ब्राह्मणेन प्रति-ग्राहयति, वनिदुर्हृदयं दक्षौ चाङ्गुल्यानि दक्षिणे बाह्वराग्रिभ्यस्य, सव्य आचथस्य, दक्षिणे पादौ गृहपतेर्ब्रतप्रदस्य, सव्यौ पादौ गृहपलगा ब्रतप्रदायाः, सहैवैनयोरोष्ठं गृहपति-रेवानुशस्ति, मणिर्जाय स्तम्भास्तिस्रश्च कीकसा ग्रावस्तुतः, तिस्र्यैव कीकसा अर्द्धचापा-नखोन्नतुः, अत ऊर्ध्वं चमसाध्वर्यूर्णा, क्लोमाः शमयितुः, शिरः सुब्रह्मण्यस्य, यश्च सुत्या-माह्वयते, तस्य चर्म, तथा खलु षट्चिंशत्सम्ययन्ते । षट्चिंशदवदाना गौः, षट्चिंशदक्षरा वृहती, वारंता वै खर्गो लोकः, वृहत्या वै देवाः खर्गं लोके यजन्ते, वृहत्या खर्गं लोके प्रतिष्ठति, प्रतितिष्ठति प्रजया यद्भिर्य एवं विभजन्ते ।

then is to take up two stout sticks of Kásmārya* wood, one with, and the other without, leaves, and successively touch the animal and the Adhvaryu. This done, he should spread some kús'a grass on the west of the hearth, and the animal, having been laid on it with its head towards the east or the west, and the feet pointing towards the north, is to be killed by the Samitá. The instrument of destruction is not named, and it is doubtful whether a knife was used, or a spike of hard wood, one of the gambhári sticks alluded to above, was driven into the region of the heart to effect the destruction. Both methods are noticed elsewhere, and the spike was called *sphya*. But however effected, immediately after the immolation, the master of the ceremony should cover the right hypochondriac region with a little kús'a grass, and make an oblique incision to extract an important organ from the abdomen. If the immolation be made with the animal's head to the east, it will be necessary to turn the carcass over to come to the spot. The organ to be extracted is called *Vapá*, and in Sanskrit dictionaries it is set down as a synonym of fat or marrow. Some take it to be the omentum, but the commentator of Ās'valāyana describes its place to be a hollow above, and to the right of the navel,† which takes us exactly to the region of the liver, and knowing how eagerly such Hindus as take flesh meat in the present day, like the liver of goats, as a delicacy, I am disposed to believe that the word means the liver. Such a tit bit would be much more worthy of the gods than the skinny omentum, which is utterly unfit for human food.

* *Gmelina arborea*. The wood of this tree is reputed to be remarkably dense, hard and tough. The technical name of the stick is *Vapásraṇā*. A *srapani* is ordinarily a cooking pot, but in the present instance, as one of them should be अशखा "without leaves" and the other सशखा with leaves, I infer that sticks are meant.

† शमिवस्य पश्चिमे देशे वर्हिषस्तृणानि कर्त्ता । 'तं यत्र निहनिष्यन्ता भवन्ति तदध्वर्युर्वहिरधस्तादुपास्यति' इति श्रुतेः । ततस्तस्मिन् वर्हिषि प्राक्शिरसं प्रत्यक्शिरसं वोदक्पादं पशुं सञ्जपयति शमिता । उदक्पादमित्येव सिद्धे प्राक्शिरसं प्रत्यक्शिरसं वेति वचनम्, ऊर्ध्वशिरसः सञ्जपनं माभूदित्येवमर्थः । ततः कर्त्ता पुरा नाभेरर्वाङ् नाभेर्दक्षिणतो नाभेरासीनो वपास्थानं ज्ञात्वा तत्र ढणमन्तर्जाय तिर्यक् कृत्वा वपामुत्खिदेदुद्धरेत् । वपास्थानन्तु दक्षिणस्य पार्श्वस्य विविक्तप्रदेशः । यदि प्राक्शिराः सञ्जपः, तथा सति दक्षिणं पार्श्वमुत्तानं कृत्वा ढणमन्तर्जानादि कुर्यात् । ततो वपामवदाय अवखण्ड्य । पुनर्वपायहणं कृत्वा वदानार्थः । तेनान्येष्ववदानेष्वकृत्वा नि षडणानि भवन्ति । ततो वपा अपणीभ्यां परिगृह्याद्भिरभिषिच्य प्रक्षाल्य शमिवे प्रताप्य, प्रतापनन्तु घर्म्मसाचं अपणस्योत्तरत्र विधानात् । ततः शमिवस्योत्तरतो गत्वाऽग्रेणैवमौपासनमग्निं वपां जलाऽस्य दक्षिणत आसीनः अपथित्वा अपथिता तां वपामभिषार्य वर्हिषि स्रक्तशखासु निधाय उभावप्यग्री यथागतं परीत्य जुहुयात् अमुष्यै स्वाहेति ।

The liver being thus extracted, it should be cut, stuck on the two gambhāri sticks, washed, and then heated on the cooking fire. Proceeding then to the sacrificial fire, an offering is to be made to it with a bit of the liver. Sitting then on the south side of that fire, the meat is to be cooked, and butter be dropped on it while cooking. The roast being in this way completely dressed, it should be placed on the leaves of the plaksha tree (*Ficus infectoria*), and further offerings made to the two fires. On this occasion rice is likewise cooked, and the carcass being then cut up into eleven principal parts, such as the heart, the tongue, the briskets, &c. besides other minor parts, they are all to be cooked at the sāmitra fire. The heart is to be stuck on a spit and carefully roasted over the fire so as to make it tender, clarified butter being subsequently poured on it to complete the dressing.* On the completion of the operation, the different kinds of cooked meat and rice should be offered to the sacrificial fire with appropriate mantras, each ending with the word *svāhá*. If the meat and rice be offered separately, then separate *svishṭakṛit* or final offerings are to be made for each of them, otherwise one final-offering would suffice for all. The roast should be offered last without any mantra. The mantras enjoined are all extracts from the Saṁhitā of the Rig Veda.

These rules, simple as they are, are nevertheless too complicated for a feast to be improvised whenever a respectable guest honours a house; and for such a purpose, therefore, a separate set of rules have been provided in which the order of the guest to slaughter, given in a Rig Vedic verse, followed by another when immolating, is held sufficient. The ceremony is called *Madhuparka*, or the offering of honied meal. The persons for whom this ceremony was imperative, were ritvigs, kings, bridegrooms, Vedic students on their return home after the completion of their studies, Āchāryas or tutors coming to a house after a year's absence, fathers-in-law, uncles, and generally all men of high rank.† The first duty of the householder on the arrival of a guest belonging to any of these classes was, after salutation, to offer a seat. This was ordinarily a mat made of *kúśa*‡ grass, and in the case of ritvijās

* पशेर्यहणं, यानि त्रेतायामेकादशवदानानि पशेः प्रसिद्धानि, तानि यथा स्युरित्येवमर्थं । हृदयं जिह्वा वक्ष इत्येवमादीनि । सर्वाङ्गग्रहणमेकादशभ्योऽन्यान्यपि यान्यङ्गानि दृष्टानि तेषामपि विकल्पेन ग्रहणार्थं । एवमवदाय तानि शमित्वः अपयति । हृदयं शूले प्रोत्थ्य प्रतापयति यथा शृतं भवति । ततः शृतान्यभिघर्त्योद्वास्य ततः स्थालीपाकस्यैकदेशं पूर्वं जुहुयात्. तताऽवदानानि ॥ १२ ॥

† ऋत्विगाचार्य-असुर-पितृव्य-मातुलादीनामुपस्थाने मधुपर्कः, संवत्सरे पुनर्यज्ञविवाहयोरव्यागं राज्ञः अत्रियस्य च ॥ १२० ॥ Gautama apud Kulluka Bhaṭṭa; Mamu, III, 120.

‡ कूचर्द्धैर्विनिर्मितं ।

or officiating priests, it was the most appropriate ; but the word used for it by Ās'valāyana is *vishtara*, which means simply an article to sit upon, and it may have been a carpet, a stool, a chair, or a couch. Wooden seats are particularly mentioned in different works.

After the guest was seated, the most appropriate article for refreshing him, in a warm country like India, was water to wash his feet with. This was called *pādyā*, and the rule on the subject required that a Brahmana guest should have his right foot washed first, and then the left, the order being reversed in the case of Sūdras; the Kshatriyas and Vaisyas being left to follow their own inclination in the matter. The washing was repeated three times. The next offering was the *arghya*, which consisted of a little water with scents and flower garlands,* and was no doubt much more appropriate than what is offered to gods in the present day, which consists of sandal wood paste and a few grains of rice thrown on a flower and sprinkled over with water. The mantra for the offering was repeated three times. A glass of water for washing the face next followed, and the guest was expected to drink of it as much as he liked. The *Mudhaparka* strictly so called was next brought forward. It consisted of curds and honey held in a small cup, butter being substituted when honey was not at hand. When bringing it, the host was required to look at it and repeat a mantra three times. The guest received the cup while repeating a mantra, then looked at it while repeating another, and mixing the ingredients in the cup with his index finger or the thumb or the little finger with a third, and cleared his finger by giving it a jerk while repeating a fourth mantra. He was required then to repeat three mantras successively, throwing a little of the mixture after each repetition upwards into the air with the tip of his finger, offering it to Rudra, Āditya, and Vis'vedevāh. Then placing the cup on the ground, he tasted the mixture three times, repeating a mantra on each occasion. According to some, he had to eat the whole of the mixture in three mouthfuls, but according to others, a portion was left behind to be given to a Brāhman, or should such a person to receive it happen not to be at hand, to be thrown into water.† A drink of water after this honeyed meal was of course a necessity, which was met in the same way as the first drink before the meal, the mantra for it being the same ; but a second drink followed with a different mantra. The order to give the remains of a tasted food to a Brāhman is worthy of note. It would be the direst insult to a Brāhman in the present day to ask him to receive such an offering.

* गन्धमाल्यादिसंयुक्तमुदकमुच्यते । Garganārāyana's Vritti on Ās'valāyana, 105.

† ब्राह्मणाय उच्छिष्टं उद्धृतादवशिष्टं उदङ्मुखो मधुपर्कं प्रयच्छेत् । ब्राह्मणालाभे अण्डनिषिद्धे ॥ १९ ॥

A cow was next brought forward and offered to the guest ; whereupon he said, " My sin is destroyed, destroyed is my sin," and then ordered the immolation of the animal with the words *Om kuru*, " accomplish, Amen."* The host thereupon immolated the cow in the name of some appropriate divinity. If it were desired that the cow should be sanctified and let loose, then the guest repeated the mantra : " This cow is the mother of the Rudras, and the daughter of the Vasus, the sister of the Adityas, and the pivot of our happiness ; therefore I solemnly say unto all wise men, kill not this harmless sacred cow. Let her drink water and eat grass ;"† and then ordered it to be let loose, and the same was accordingly done. Lest this should lead to the idea that the feast at this ceremony may be celebrated without flesh meat, Āśvalāyana emphatically ordains that no *Madhuparka* should be celebrated without flesh meat,‡ and his commentator Garganārāyaṇa provides for this by saying that " when the animal is sacrificed, its meat supplies the requirement of the feast ; should it be let loose, flesh meat should be provided by other means, but on no account should the feast be without that article."§

In this he has followed the ordinance of Manu, who declares that the man who, having in due form performed a (*Madhuparka* or other) ceremony, fails to eat flesh meat, will be doomed to be born an animal for twenty-one generations ;|| and that Brahmin having created animals for sacrifices, their immolation at a Vedic ceremonial cannot be injurious, and that animals, beasts, trees, tortoises, and birds, destroyed in the performance of sacred rites, rise after death in the scale of creation.¶

Convenient as the ceremony of *Madhuparka* was for the celebration of a feast, it was not calculated to afford a ready and cheap supply of meat to persons given to its use, and accordingly Manu ordained (ante, p. 176,) that

* आचानोदकाय मां वेदयन्ते ॥ २२ ॥

हता मे पाप्मा पाप्मा मे हत इति जपित्वा ओङ्कुरतेति कारयिष्यन् ॥ २४ ॥

इमं मन्त्रं जपित्वा ओङ्कुरतेति ब्रूयात् । यदि कारयिष्यन् मारयिष्यन् भवति तदा च दाता आशुभतः । तत्र देवताः प्रागुक्ताः ॥ २४ ॥

† माता रुद्राणां दुहिता वसूनां स्वसाऽदित्यानामसूतस्य नाभिः । प्रणु वेचं चिकितुषे जनाय मा गामनागादिति बधिष्ठ । पिवतूदकं दृणान्यत् । ओमुत्सृजत ॥

This mantra occurs in the ceremony of letting loose the cow which used to be led before a corpse to the burning ground at a funeral. Vide ante vol. XXXIX p. 217.

‡ नामांसा मधुपर्का भवति भवति ॥ २६ ॥

§ मधुपर्काद्भोजनमसां न भवतीत्यर्थः । कुतः । सांसस्य भोजनाङ्गत्वेन लोके प्रसिद्धत्वात् । अनेनाभ्युपायेन भोजनमप्यत्र विहितं भवति । पशुकरणपक्षे तन्मांसिनं भोजनं, उत्सृजनपक्षे सांसान्तरेण । Āśvalāyana I, 24-26.

|| Manu V. 35.

¶ Ibid V. 394.

flesh meat purchased at the butchers' stall was pure, and fit for consumption by pious Hindus. I have nowhere noticed that butchers were required, as among the Muhammadans, to observe any ceremonial rite before slaughtering animals, and am disposed to believe that none was observed, and that the only restriction was that the person purchasing meat for food had to offer a portion of it after dressing it to the gods, manes, guests, or beggars, which sufficed to accomplish a *yajña*.

It is worthy of note here, that while killing of Brāhmanas, drinking of spirituous liquors by Brāhmanas, stealing of gold belonging to Brāhmanas, defilement of the bed of spiritual preceptors, and association for a year with those who are guilty of the aforesaid four crimes, are reckoned by Yājñavalkya among the most heinous crimes—*Mahāpātaka*, the mischievous killing of cattle is included among secondary or *upapātaka* offences, and the expiation for it is comparatively slight. A Brāhman guilty of drinking spirits cannot expiate his crime without suicide produced by a draft of molten metal, while a cow-killer is let off by Samvarta with a fortnight's short-commons, consisting of barley-meal, milk, curds and butter, a feast to Brāhmanas and the gift of a cow.* Yājñavalkya is a little more exacting; he insists upon drinking of the five products of the cow, *pañcagavya*, following a cow as it roams about, sleeping in a cattle-shed regularly for a whole month, and ending with the gift of a cow, or a fine equal to the value of the animal destroyed.† He also recommends other forms of expiation, and his rival Smṛitikāras have each his own scheme; but none insists upon any thing approaching to suicide.

The author of the *Nārasinhya Prayoga Pārijāta* has copied verbatim As'valāyanas' rule about the necessity of eating beef at the Madhuparka ceremony, but qualified it by a quotation from the Āditya Purāṇa which says that in the present Kali age the Madhuparka should be celebrated without slaughtering a cow. This quotation has been given at length both by Pārāsara‡ and Hemādri and other compilers, and runs as follows:—"Protracted Brahmacharya, carrying of the begging pot called Kamandalu, production of issue by a brother-in-law, gift of a daughter once already given away (widow marriage), marriage with girls of other than one's own caste by the twice-born classes, killing of noble Brāhmanas (versed in the Vedas) in fair warfare even if they come to the attack, entrance into the Vānaprastha

* सक्त्यादकमैचाशी पयोदधिघृतं शङ्कत् ।
एतानि क्रमशोऽश्वीयान्मासार्धं सुसमाहितः ।
ब्राह्मणान् भोजयित्वा तु गां दद्यादात्मशुद्धये ॥ संवर्त्तः ।
† पञ्चगव्यं पिबन् गोघ्ना मासमासीत संयतः ।
गोष्ठे श्वो गोऽनुगामी गोप्रदानेन शुध्यति ॥ याज्ञवल्क्यः ।

‡ I suppose this is a compiler and not the author of the *Saṁhitā*, for the latter does not quote authorities in support of his rules and ordinances.

state according to law, reduction of the period of mourning on account of duty, or service, or for reading the Vedas ; expiations on the part of Brāhmins involving loss of life, condemnation for association with criminals, immolation of animals at the Madhuparka, acceptance as sons, of other than legitimate and adopted sons ; boarding together on the part of the twice-born householders with a servant, cowherd, friend of the family, and persons with whom agriculture is jointly carried on if they be S'udras by caste ; pilgrimage to very remote places ; cooking of food by S'udras for Brāhmins, expiatory suicide by falling from very high places, or into the fire ; suicide on account of extreme old age, and the like have been abstained from by noble and learned men at the beginning of the Kali Yuga for the well-being of mankind. The practice of revered persons is proof as potent as that of the Vedas.* The Vrihamāradīya Purāṇa follows this very closely, but at the same time it omits some acts and prohibits others which are not condemned by the former. The additional acts condemned are, suicide by getting one's self drowned in the sea, offering of flesh meat at S'rāddhas, human sacrifice, horse sacrifice, Gomedha sacrifice, and Vedic yajñas involving sacrifices of cattle.† It is

* हेमाद्रिपराशरधेरादित्यपुराणम् ।

दीर्घकालं ब्रह्मचर्यं धारणञ्च कभण्डलोः ।
 देवरेण सुतोत्पत्तिर्दत्तकन्या प्रदीयते ॥
 कन्यानामसवर्णानां विवाहस्य द्विजातिभिः ।
 अततायिद्विजाप्राणां धर्मसूत्रेण हिंसनं ।
 वानप्रस्थाश्रमस्यापि प्रवेशे विधिचेदितः ॥
 वृत्तस्वाध्यायभाषेक्षमघमङ्गोचनं तथा ।
 प्रायश्चित्तविधानञ्च विप्राणां मरणान्तिकं ॥
 संसर्गदोषः पापेषु मधुपर्के पशोर्बधः ।
 दत्तौरसेतरेष्वनु पुत्रत्वेन परिग्रहः ॥
 शूद्रेषु दासगापालकुलमिवाङ्गैरीरिणां ।
 भोज्यान्नता गृहस्थस्य तीर्थमेवातिदूरतः ॥
 ब्राह्मणादिषु शूद्रस्य पक्तादिन्नियापि च ।
 भृगवः प्रपतनञ्चैव वृद्धादिमरणन्तथा ॥

इत्यादीनभिधाय ।

एतानि लोकगुप्तरथं कलेरादौ महात्मभिः ।
 निर्वाञ्जितानि कर्माणि व्यवस्थापूर्वकं बुधैः ।
 समयस्यापि साधूनां प्रमाणं वेदवद् भवेत् ॥

† वृहन्नारदीये । समुद्रयाचास्त्रोकारः कसण्डलुविधारणम् ।

द्विजानामसवर्णानां कन्यासूत्रपथमस्तथा ॥
 देवरेण सुतोत्पत्तिर्भधुपर्के पशोर्बधः ।
 मांसादनं तथा अङ्गं वानप्रस्थाश्रमस्तथा ॥

worthy of note, however, that this prohibition in the *Āditya Purāṇa* is not positive and explicit, but implied: "Because certain noble and wise men did not do so, and the practice of pious men is proof as potent as that of the Vedas," ergo they should not be done, the author wished to say, but did not do so in so many words. Both these extracts proceed from *Upapurāṇas* of probably not more than eleven or twelve hundred years of age. According to Professor Wilson, the *Upapurāṇas* are not older than the twelfth century, but seeing that the *Vrihannāradya* has been quoted as an authority by Vallāla Sena in his *Dānasāgara*, and he lived in the eleventh century, it must be at least four or five centuries older; but they have been so carelessly preserved, and are so full of interpolations, and altogether are of such questionable authenticity, that even the most orthodox Hindu holds them to be of very secondary rank compared to the Vedas, the *Smṛitis* and the *Sūtras*. Thus it is said in the *Prayoga Pārijāta* that where the *S'ruti* and the *Smṛiti* disagree, the *S'ruti* should prevail. Again the *Smṛitis* are more venerable than the *Purāṇas*, and of the *Smṛitis* *Manu* is the most authoritative.*

In the opinion of Paulastya, who is himself an original *Smṛitikāra*, *Manu* must yield to the *Kalpa Sūtras*, which, being derived immediately from the Vedas, are of greater authority than the *Smṛitis*.† This has not been contradicted by any lawgiver or commentator. The *Upapurāṇas* hold a lower rank than the *Purāṇas*, and have nowhere been allowed to override the latter, much less the *S'ruti* and the *Smṛiti*; the order of precedence being according to the above, 1st *S'ruti* or *Veda*, 2nd *Sūtra*, 3rd *Smṛiti*, 4th *Purāṇas*, 5th *Upapurāṇa*. It is not a little remarkable, therefore, that the last should be allowed in the present instance to prevail over the first four. The author of the *Nirṇaya sindhu* assumes even a lower ground. He begins by quoting an unnamed authority which says, "Works which lead not to paradise, and are condemned by public opinion, should not be performed;" and then argues, "Thus, the slaughter of large bulls and large sheep for *Brāhmaṇas* versed in the Vedas, though duly ordained, should not be done, being

दत्तायाश्चैव कन्यायाः पुनर्दानं वरस्य च ।

दीर्घकालं ब्रह्मचर्यं नरमेधाश्चमेधकौ ॥

महाप्रस्थानगमनं गोमेषं च तथा मखं ।

इमान् धर्मान् कलियुगे वर्ज्यानाञ्जर्मनीषिणः ॥

* श्रुतिस्मृतिपुराणानां विरोधो यत्र विद्यते ।

तत्र श्रौतं प्रमाणम् तथोद्दिष्टे स्मृतिर्विरा ॥

वेदार्थोपनिबन्धनात् प्राधान्यं हि मनोः स्मृतम् ।

मन्वर्थविपरीता या सा स्मृतिरपधास्यते ॥

† कल्पसूत्रस्मृत्योर्विरोधे प्रत्यक्षश्रुतिसूत्रत्वेन कल्पसूत्रं प्रबलमित्याह हमाद्रा सङ्गहे

पौलस्त्याः ।

detested by the public. Further, the rule, let a cow fit for offering to Mitra and Varuna, or a barren cow, or one that has ceased to bear after first calving, be sacrificed, is duly ordained; still such sacrifice being opposed to public feeling, should not be performed."* If such be the case, the question arises, whence comes this public feeling against the ordinances of the Vedas? And we can nowhere meet with a more appropriate reply than in the fact that when the Bráhmans had to contend against Buddhism, which emphatically and so successfully denounced all sacrifices, they found the doctrine of respect for animal life too strong and too popular to be overcome, and therefore gradually and imperceptibly adopted it in such a manner as to make it appear a part of their Śāstra. They gave prominence to such passages as preached benevolence and mercy for all animated creation, and so removed to the background the sacrificial ordinances as to put them entirely out of sight. Such a process is even now going on in Hinduism under the influence of Christianity, and, as the Hindu mind was during the ascendancy of Buddhism already well prepared for a change by the teachings of the Buddhist missionaries, no difficulty was met with in making faith, devotion, and love supply the place of the holocausts and unlimited meat offerings ordained by the Vedas. The abstention was at first no doubt optional, but gradually it became general, partly from a natural disposition to benevolence, and partly out of respect for the feeling of Buddhist neighbours, such as the Muhammadans now evince for their Hindu fellow-subjects by abstaining from beef in different parts of Bengal, that writers found it easy to appeal to the practice of the people and public feeling as proofs even as potent as the Vedas, and authoritatively to declare that sacrifices were forbidden in the present age. This once done, the change was complete. In short, the Buddhist appeal to humanity proved too much for the Smṛiti, and custom has now given a rigidity to the horror against the sacrifice of animal life, which even the Vedas fail to overcome.

* अस्वर्ग्यं लोकविद्रिष्टं धर्ममप्याचरेन्न त्विति निषेधात् । यथा, महोत्सवं वा महाजं वा श्रेष्ठियाय प्रकल्पयेदिति विधानेऽपि लोकविद्रिष्टत्वादननुष्ठानं । यथा वा मैत्रावरुणौ गां यशामन, बन्ध्यामालभेत इति गवालम्बनविधानेऽपि लोकविद्रिष्टत्वादननुष्ठानं ।

निर्णयसिन्धुः ।

The Conquest of South India in the Twelfth century by Parākrama Bāhu, the great King of Ceylon.—By T. W. RHYE DAVIDS, District Judge, Anurādhapura, Ceylon.

It is known from Turnour's Epitome and Armour's translation of the Dambulla inscription that Parākrama Bāhu's generals made successful expeditions into South India, but no detailed account has yet been published. The history of these expeditions is given in the Mahāwamsa, chapters 76 and 77; but as these contain 139 verses, equal to about one-seventh of the published part of the book, a translation of them would occupy too much space, and would be a formidable task to undertake, while a shorter account from one of the many trustworthy Siṅhalese histories may be useful to those who take interest in the history and ancient geography of the Dak'hin. I have chosen the 'Narendracarita-avalokana-pradīpikāwa,' the account in which, though a mere abstract, may be depended upon to contain nothing not found in the Mahāwamsa, and to be in fact as far as it goes almost a literal translation of that work with many omissions.

The chapter translated is the 66th; the next goes on to relate how Kulasekhara, after his flight in disguise, fortified himself in the stronghold* of Toṇḍamāna, and afterwards, sallying thence, retook Kandayaru, defeating two of Lankāpura's lieutenants: how Lankāpura again defeated him, re-established peace, and confirmed Wirapāndu on the throne, restoring the banished Tamil nobles to their lands, and anointing Wirapāndu in the city of Madura. It is mentioned also incidentally that on the orders of Parākrama Bāhu he struck copper coins (Kahawana, from Kahapaṇa = Karshāpaṇa). There are three copper coins of Parākrama Bāhu, two given in Prinsep,† of which I know of at least twenty or thirty examples, and one very rare with a well-executed lion on the reverse by the side of the standing figure. It will also, I think, appear from the notes to this translation that the gold coin with the inscription *Laṅkeswara*, unassigned by Prinsep, must have been struck by Parākrama Bāhu.

The 66th Chapter of Narendracarita-avalokana Pradīpikāwa.

After that, when the Mahārāja Parākrama Bāhu was promoting religion (*Sāsana*) and prosperity, after in the 8th year from his coronation, as is related above, he had fought the great fight with his enemies in Ruhunu rāta,‡ and having conquered was living in security; although both because the

* Parwata widurgga.

† Edition by Thomas, I, 419.

‡ The southern part of Ceylon.

belief of the people of Rāmānya was the same as that of the Buddha-believing-men of Ceylon, and also because it was the ancient custom so to do, Parākrāma, the King, was living in peace with the King of Rāmānya—yet the ruler of Rāmānya, listening to the words of wicked men, forsook the old custom of providing maintenance for the ambassadors of the Lankā rājā,* and at the sale of elephants and tuskers raised the price above the wonted price; and further, when he read the royal message sent to him, bid saying, “These messengers are sent to go to Kambōja,” and so plundered all their goods and put them in prison in the Malaya country. And further, without hearing the friendly words of the ambassador (*dūtāmātya*) Topaswī, sent about this matter by the king of Ceylon, he seized their (*sic*) tuskers and ships, and having tortured them made them hewers of wood and drawers of water: and he stopped the letters and seized the presents of honour which the king of Ceylon sent to a chief (*jeṣṭha*) in Jambudwīpa named Kāsyapa. Then one day he sent for the imprisoned ambassadors and said, “The Sīñhalese ships had no right to come to our land; therefore give me letters under your hand that no wrong has been done to you, the ambassadors.” So he frightened them with the fear of death, and took letters under their hand. Then he put them both, namely, Wāgiswarācāri and Dharma-kīrti Paṇḍita, on board a leaky vessel and sent them out to sea.

Soon after, he seized some royal virgins sent by the king of Ceylon to the king of Kambōja: on hearing this, Parākrama Bāhu was very angry, and assembled his council, and told them all the facts, saying, “We must kill or bring here that king who *will* be our enemy, which of you undertakes the task?” Damilādhipikāri, the chief of the astrologers, accepted the task joyfully, and quickly made several hundred ships ready for sea, and in less than five months put to sea with his fleet properly officered and with provisions for twelve months, and shields to stop the swiftest arrows, and swords, and bows, and arrows and poisoned† arrows, and all other kinds of weapons, and doctors with their assistants.

Of these one ship arrived at Kakadwīpa and having fought there and taken the king and his ministers prisoners, brought and delivered them up to Parākrama Bāhu, the king. Two ships arrived at the harbour Kusuma in Aramuna, and took in battle and laid waste the country from the port Sapattota,‡ over which Kurttipurāpan was Governor.

Damilādhipikāri himself arrived at the port Papphāta, and there having fought a great battle and taken the inhabitants alive and seized the whole land of Rāmānya, went on to the city of Ukkāka, and took prisoner the Lord of Rāmānya, and overcame the land: then going round the town on

* Query, Paying the salary of a Political Resident?

† This word is doubtful, *wisadewa*, the latter half of which is not clear.

‡ Tota = tirtha; pam = usually parwata.

the prime minister's own white elephant, he proclaimed the orders of the Lord of Ceylon.

At that time great fear fell on all the people of Rāmānya. They thought, "This has happened by our folly: in future let us give the tribute of elephants as many as are wanted: and let us do service* to the king." So they sent letters to the priesthood of Sri Lankā stating this, and asking that the Lord of Ceylon† might be pleased to take away their fear. This news the priests of the three sects‡ made known to Parākrama Bahu, and it was ordered accordingly.

At that time, the Pāṇḍu king Parākrama of the city of Madura being terrified by the army with which king Kulasekhara was preparing to attack him, fled for help to the royal feet of Parākrama Bāhu: who listened kindly to the ambassadors, thinking: "It is right to protect those who come to us for help," and sending for Lankāpura-daṇḍa-nātha, the minister, commanded him saying—"Go and establish Parākrama as overlord (mahārājā) in his own country and slay that Kulasekhara." So he received the order on his own head, and made ready for the voyage at Mahātota.§

At that time Kulasekhara, the king, had already surrounded Madura with a large army, and had taken prisoner the Pāṇḍu king and his army. Parākrama Bahu, the great king, hearing this, sent orders saying "Establish in that kingdom some one who comes of the stock of the kings of Pāṇḍu." So Lankāpura-daṇḍa-nātha|| with a great army filling several hundred ships

* *Mehewara*, homage.

† Lord of Ceylon = Lankeswara. Parākrama Bāhu's full title given in his inscription at Dambulla is Aprati Malla Niṣṣanka Malla Kūlinga Lankeswara Parākrama Bāhu Cakra wartin wahanso. The Sanskrit Gāthā at the commencement of the great inscriptions at the Palace Gate in Pulastipura concludes, "Hear then wise counsels, they are spoken by Niṣṣanka Malla (Niṣṣanka malloditān). The name Lankeswara explains the gold coin which Prinsep (Edition, Thomas, Vol. I., 421) could not understand.

‡ There are several examples of the peace-making propensities of the Buddhist priests in the Mahāwansa (pp. 148, LXV, last line), but not one of their having stirred up religious war. The union of these three sects [nikā] into one is always referred to as one of Parākrama Bahu the Great's most glorious achievements.

§ On the main land, opposite Mannār Island, there are still extensive ruins, or rather heaps of ruins, in which many coins and jewels have been found after heavy rains, among others the Lankeswara gold coin above alluded to.

|| This name occurs four times in the MS., Lankāpura-daṇḍa-mā-nātha, Lankāpura-daṇḍa-nātha, and twice simply Lankāpura. As my MS. of the Narendra-carit-āvalokana-pradīpikāwa is the only one I know of, I have no means of comparing MSS., and have simply chosen Lankāpura as a well known word and likely name, which Lankāpura is not. The latter has, however, this MS. in its favour and is quite possible. Daṇḍanātha or Mānātha is about equal to Lord High Sheriff. The appointment of this officer and the chief astrologer as generals seem to me to imply, not so

crossed the sea, and landed at a place called Iaccilla (pronounce Lach-chilla), and there fought with and defeated the army of a Tamil named Arak. The rulers of the five districts (*mandalika*) Iattirikaya-Naḍalawala, Kuṇḍamuttarā, Willācāra, Aṇcukōṭṭanāḍalawāra, Narasinha-dēwa, then came up with an army, and after a fierce fight were routed and defeated. In the tenth battle, Silā-megha, Raja-tungabrahma, Hāṇkiya-rāyara, Aṇcukōṇḍa-rāyara, Palumbiṇya-rāyara, Panasiyarāyara, these six rulers joined their forces to those of the above named five; but after a fierce battle they also were overthrown.

Then on the orders of Parākrama Bāhu, Lankapura-dandanītha put up a pillar about four *gauts* from Rāmeswara and half way between the two seas, and bringing many people from Kandukāla there, he made them repair all the viharas in Ceylon which they the Tamils had themselves destroyed: and he formed at that place a town called Parākrama, surrounding it with a large rampart, two thousand four hundred cubits long, and there he lived.

At that time when the Siṅhalese army having encamped was collecting their forces from the divisions* Lokacukundī and Colaganga, Kulasekhara sent Sundara, the Pāṇḍu king, and many councillors to the war, but Lankārapura defeated them in three pitched battles, and took the town Marukkattā. From thence in the battle with Alawana Perumal, he overcame the following countries, villages, and towns† with their inhabitants, *viz.*, Kollūraya, Māruluthūpaya, Sokacukundiya, Marawaraya, and Kuṇappunallūraya. Again, when the three chiefs Uttaraya, Gopuraya, and Kirtigajadwīraya assembled their forces in Sempota-mārīta, he defeated the three armies of Kumawara, Kallara, and Wallakunnara, and took all their horses, chariots, elephants, and baggage.

Kulasekhara then prepared for a campaign in the Kandaṇḍu district, called Wisutrippālu, and with his generals Tuwarādhipati, Welara, Naṇḍamātarana, Wirajjerāyara, Nigasarāyara, Kalawadi-nālawāra, Kanga-rāyara, and many others surrounded Kandaṇḍuruwa. But the Siṅhalese commanders, the energetic Lankāpura and Jagadwijaya consulted together, joined their forces, gave battle, and broke the armies of Kulasekhara and his Tamil warriors, who fled to their own countries, and closing all their doors and gates made themselves fast there. Then Dewa Lankāpura and his generals

much that generals were chosen from the high civil officers, as that the high civil appointments were filled (as is often the case in the backward states of society) by military men.

* This use of the word *mandalika* is inconsistent with that noted above; but the dictionaries do not give the word, and the names seem clearly to point above to men, and here to countries. Narasinha-deva could scarcely be applied to a country, and Colagangā is as unlikely a name for a man.

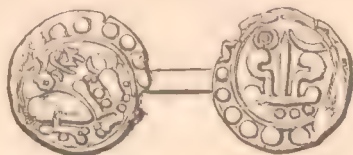
† Niyamagrāma.

Gokanna, Danda-náyaka, Kesa-dhátu, and Loka-wunga, collected their forces at the Western gate,* and broke in, each through a different rampart or gate, and entered the city, and slaughtered an immense host of Tamils and their cavalry. Kulasekhara then became afraid, and escaped through the East gate in disguise, and got away. So the Sinhalese destroyed many Tamils, and took much plunder, and put up flags of victory, and celebrated a festival of victory, and made Wirapáñdu king with great ceremony.

Note on an Arakanese Coin.—By CAPTAIN G. E. FRYER, *Officiating Deputy Commissioner of Sandoway.*

The subject of this paper is a small silver coin of about the size of a four-anna piece (Fig. 1) bearing the following device, *obverse*, a bull cou-

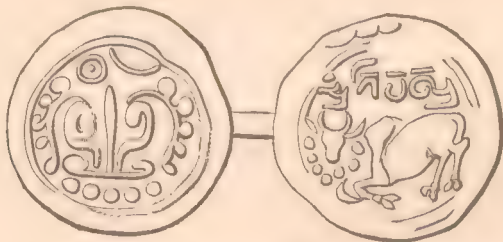
Fig. 1.



chant, caparisoned. Nagari characters imperfect: *reverse*, the sun, and crescent moon and trident within a circle, outside of which is a row of round dots.

The coin is smaller than those described by Captain Latter in the Journal for February, 1816, but is of precisely the same type as two therein figured, one of which is here reproduced (fig. 2).

Fig. 2.

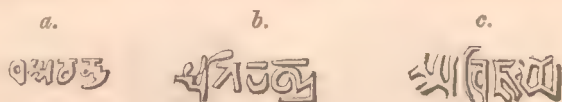


Captain Latter thought that they were "Shivite coins probably appertaining to a time when the emblems of the worship of Shiva and those of

* The name of the city being not given, there must I think be a misreading in the word Siya-mandawu-rata, translated above "to their own countries." (*Siya*, one's own from *swa*). *Nagara* in Sanskrit is *nagara* in Sinhalese, and *ra* is the sign of the dative case; the latter half of siyamandawu-rata should therefore perhaps be *nagararata* and the former half the name of the city, *Siyana* or *Siyata* (there being no distinction made in my MS. between *t* and *n*), or some such name.

Buddhism had something in common; for we see in them the Buddhist triglyph represented by the trident of Shiva. On each side is a scroll and beneath are certain round dots. These dots are curious, for they here occupy the same position in reference to the triglyph of Shiva that the guttæ do to the triglyph of architecture," and he called them symbolical coins, because he considered they represented "whatever ideas they were intended to convey by means of pure symbolism alone, and afforded no clue by which to connect them with any particular prince."

The characters upon the coin now exhibited are too indistinct to admit of their being deciphered, but those upon Captain Latter's are clear and well defined, and I trust to be able to show that they are not, as has been supposed, symbolical coins, but are, in fact, records of an ancient dynasty of Arakan kings. The titles upon the obverse of Captain Latter's coins, are here reproduced.



Captain Latter considered "(c) to represent the characteristics of the old Pali Alphabet with the exception of the first letter and may be read *Srī Vrieghau*. The other two may be determined by those better versed in the old Nagari character; (b) is of a more ancient type than (a), which last is of the same class as the characters comprising the inscription on the temple of Shiva in the village of Darshi, described in the Society's Journal, No. 43, July, 1835."

With the exception of the final compound *ndr* in (a) and (b), which is probably modern, the characters seem to correspond with the Sanskrit of the fifth century A. D., as given in the table of modifications at p. 276, Vol. VII of the Journal, for 1838.

Our Assistant Secretary, Pratāpachandra Ghosha, well-versed in Nagari characters, has proposed the following readings for these letters—(c) instead of *Srī vrieghau*, he would read *Srī-vi-krama*: (b) *Srī-ta-candra*: (a) *Dhamma-chandra*. Thus two out of the three end in *chandra*.

Captain Latter in his paper states, that a popular tradition is connected with these coins, which shortly is as follows:—a certain Arakan king, before setting out on a voyage to China, left with his wife a ring, and told her in case he did not return in seven years, she was to raise to the throne and marry any person whom it would fit. It fitted a herdsman whom she married, and who, in commemoration of his origin, put on these coins an ox and a goad (the trident).

In Vol. XIII of the Journal, pp. 36, 37, Captain (now Sir Arthur) Phayre tells us in his 'History of Arakan,' that the monarch who set out for

China was *Cula taing candra*, the ninth and last sovereign of the dynasty of the city of *Vaisali*, and that his wife *Cau-da-devi*, in $\frac{\text{Arakan era } 319}{\text{A. D. } 957}$, first married and raised to the throne a chief of the *Myu* tribe, named *Amyatu*, and on his death, seven years after, married his nephew *Pe-byu*, both of whom the ring was found to fit. After *Pe-byu*'s accession in A. D. 964, he abandoned the city of *Vaisali*, and closed a dynasty which had virtually ended in A. D. 957, when *Cula taing candra* was drowned on his return from China. All the names in this dynasty end in *candra*, and that of the seventh king *Siri taing candra* is so like *Sri ta candra* on one of Captain Latter's coins, that the identity seems complete.

I think therefore we may rightly regard these coins as records of the *Vaisali* dynasty of Arakan, of which there reigned in lineal succession nine kings from A. D. 788 to 957, or throughout a period of 169 years, synchronous with the Anglo-Saxon period of English history.

<i>Dynasty of Vaisali.</i>		A. D.
1.	Maha taing candra,	788
2.	Suriya taing candra,	810
3.	Mola taing candra,	830
4.	Pola taing candra,	849
5.	Kala taing candra,	875
6.	Dula taing candra,	884
7.	Siri taing candra,	903
8.	Singha taing candra,	935
9.	Cula taing candra,	951

*List of the Books contained in Chand's poem, the Prithirāja Rāso.—By
JOHN BEAMES, B. C. S., Balasore.*

I receive so many letters from enquirers in various parts of India asking for information as to whether this or that poem is to be found in the genuine works of Chand, that I conceive the Society would be doing a favour to scholars in publishing the following accurate list in supersession of some defective and inaccurate list previously made public.

There are in circulation in some parts of India scraps of bardic poems all of which are dignified by the name of Chand. Some of these are apparently extracts from the real work, others are by entirely different authors.

Five MSS. may be taken to be genuine ;—

1. The Baidla.
2. Colonel Tod's, R. A. Socy.
3. Colonel Caulfield's, do.
4. The Bodleian.
5. The Agra College.

All these five I have seen, and compared the headings of the chapters in each ; with very few and trifling exceptions they all agree in this respect, and we may, therefore, on their authority pronounce the following list to be correct, and may reject, or at least look with suspicion on, all fragments of old Hindi rhapsodies which do not find a place in it. If genuine, they are at any rate not "canonical." I give a brief note of the contents of those *prastavas* which I have read, of the rest merely the names and number of *kavitts* are given.

1. **Adi Parva.** 401 *kavitts*.* Invocations, legends of early sages, the origin of the Chauhān race, their genealogy, birth of Prithirāj.

2. **Da'sama.** 220k. Poems on the ten *avatārs* of Vishnu.

3. **Dī'li'ki'li' katha'.** 39k. Story of the iron pillar.

4. **Aja'nva'h.** 18k. 166 lines also called Lohānā Ajānvāhu.

5. **Kanhapatti.** 64k. also called Kanhākhapatti. Kanh the Chauhān kills Pratāp Singh the Chāluk in open *darbār*, because he twisted his moustache. Prithirāj compels him to wear a bandage over his eyes in *darbār* ; hence the name of the book.

6. **A'khetak bir.** 113k. Marvellous story of a hunting expedition in which Chand sees Siva and gets a blessing from him.

7. **Na'har Rai.** 118k. Fight with Nāhar Rāi.

8. **Mewa'ti' Mugal.** 45k. Fight with the Mewātis.

* Each *kavitt*, or *chhand*, contains generally about 30 lines, except *Sāthak*, *dohā* and one or two peculiar and rarely used metres, which seldom exceed 8 lines each.

9. **Husen Katha.** 94k. Battle with Shahábuddin, who came after Husen Khán, one of his chiefs, who had taken refuge with Prithiráj. Shaháb is captured, but released, Husen slain.

10. **A'khet Chu'k.** 30k. Shaháb attacks Prithiráj when out hunting, with very few attendants, but is defeated.

11. **Chitrarekha'.** 17k. Story of Chitrarekhá, the Gakkhar princess, who was the *causa belli* between Shaháb and Husen Khán in Bk. 9. She was the Sháh's concubine and Husen ran away with her.

12. **Bhola Rai'.** 285k. War with Bhola Rai of Gujarát.

13. **Salakh Judh.** 94k. Salakh takes the Sultán captive, he is released.

14. **Inchhini' Vyah.** 118k. Prithiráj's marriage with Inchhini.

15. **Mugal Judh.** 20k. Battle with the Mughals.

16. **Da'himi Vya'h.** 16k. Marriage with Dahimi, daughter of Chand Sen, the Pundír.

17. **Bhu'mi Swapan.** 47k.

18. **Dillida'n.** 47. Gift of the kingdom of Dilli to 'Prithiráj by his grandfather Anangapál, the Tuar.

19. **Ma'dho Bha't.** 113k. Visit of Madho the Bhat, fresh attack by the Sultan Shahábuddin; he is captured and let go again on paying a fine in accordance with Rájpút custom.

20. **Padma'vati Vya'h.** 46k. Already translated by me in J. A. S. B. I reckoned it as the 19th book, but it is the 20th. In Tod's copy, the Akhet bir is not counted. This omission makes all the numbering of the chapters wrong by one throughout.

21. **Alha' Udal.** Also called Prithirája rāyaso, a name differing from Prithiráj rāso, but often erroneously applied to the whole poem; it is also called Mahoba Samyo, 308 kavits; occupies 52 quarto pages. The longest but one of all the chapters.

Relates the war with Parimal, the Chandel King of Mahobá, in which he was assisted by the two heroes Alhá and Udal of the Banáphar clan.

22. **Pritha Vya'h.** 99k. Marriage of Prithá, sister of Prithiráj with Samar Singh, Rájá of Chittrakot.

23. **Holi Katha'.** 22. Short kavitts. Description of the Holi festival, the origin of which is attributed to Siva's gift to a female devotee, contrary to the modern Vaishnava theory.

24. **Dí'pma'1 Katha'.** 35k. Legendary origin of the Dipmála or Dewáli festival.

25. **Dhan Katha'.** 314k. Prithiráj finds a treasure in the Khatṭu forest. While digging it up, is attacked by the Sultan whom, as usual, he captures and releases.

26. **Sa'sibrata'.** 542k. Abduction of Sasibrata, daughter of the Rájá of Deogiri, by Prithiráj, and war with Jaychand of Kanauj in consequence.

27. **Devagiri.** 64k. Siege of Deogiri by Jaychand and his ultimate defeat by Chamand Rai, one of Prithiráj's generals.

28. **Rewa'tata.** 96k. Battle with the Sultán on the banks of the Rewá.

29. **Anangpa'l** 98k. Anangpál returns to Dilli, but after a short stay returns to Badrinath. (He wanted to get the kingdom back again from Prithiráj, but failed).

30. **Ghagharki lara'i.** 48k. Battle with the Sháh at the Ghaghar river (Daradwati, near Ambala).

31. **Karnati Patra.** 23k. Prithiráj goes to the "Karnáta des" in the south.

32. **Pi'pa' Judh.** 72k.

33. **Indra'vati Vya'h.** 70k. Also called "Samar Si Rájá."

33. (34) **Indra'vati Vya'h.** 60k. A second book with the same name as the preceding, but with separate heading and ending.

34. (35) **Jait Rao Judh.** 36k. The Sultán surprises Prithiráj while hunting; Jait Rao seizes him (they are always doing this).

35. (36) **Ka'ngura'.** 32k. Prithiráj takes the hill fort of Kángurá (Kángará?)

36. (37) **Hansa'vati Vya'h.** 155k. Marriage with Hansávati.

37. (38) **Pa'har Ra'i.** 71k.

38. (39) **Barun Katha'.** 33k.

39. (40) **Somesar badh.** 88k. Death of Somesar, Prithiráj's father, (killed by Bholá Bhím of Gujarát).

40. (41) **Pajjun chhonga'na'.** 17k.

41. (42) **Pajjun chalukya.** 29k.

42. (43) **Chand Dwa'rika'.** 59k. Chand's pilgrimage to Dwáriká.

43. (44) **Kaima's Judh.** 79k. Kaimás, one of Prithiráj's generals, seizes the Sultán in the Khaṭṭu forest.

44. (45) **Bhi'm Badh.** 148k. Prithiráj kills Bholá Rái Bhimang, the Chalukya Rájá of Gujarát, who had killed his father Somesar.

45. (46) **Vinaya Mangal.** 188k. In two parts. 1st of 112 kavitts, relates the previous birth of Sanyogita. 2nd in 86k. her penance.

46. (47) **Suk varnan.** 78k.

47. (48) **Ba'luka' Rai.** 119k.

48. (49) **Panga Jagya vidhwansa.** 20k.

49. (50) **Sanjogita nem.** Sanjogitá's vow to marry Prithiráj.

50. (51) **Hansi Judh.** 203k. In two parts, 1st, *pratham judh*, 90k.; 2nd, *dwitijajudh*, 113k.

51. (52) **Pajju'n mahuba.** 23k.

52. (53) *Pajjun Pa'tisa'h Judh.* 34k. Sultán gets caught again for the twentieth time or so ; as he is always released again, it does not much matter.

53. (54) *Sa'mant Panga Judh.* 25k.

54. (55) *Samar Panga Judh.* 62k. Fight of Jaichand Rao with Samar Si.

55. (56) *Kaima's Badh.* 186k. Death of Kaimás.

56. (57) *Durga' Keda'r.* 168k. Sultán gets taken again.

57. (58) *Dilli varnan.* 17k.

58. (59) *Jangam Katha'.* 7k. At end "jangam sophí kathá."

59. (60) *Kanavajja Judh.* 1455 kavitts. Prithiráj's war with Rájá Jay Chand of Kanauj. The longest book in the whole poem, 121 quarto pages.

60. (61) *S'uk charitra.* 102k. Interlude.

61. (62) *Akhhet chakh s'ra'p.* 118k.

62. (63) *Dhi'r Pundi'r.* 312k. Exploits of Dhir, the Pundir ; takes the Sultán again, and again lets him go—for the last time.

63. (64) *Bibah Samyo.* 3k. List of Prithiráj's wives.

64. (65) *Bari' lara'i.* 937k. The great battle in which Prithiráj was taken.

65. (66) *Ba'n bodh.* 363k. Events following the battle. Chand's search for Prithiráj. Conversation with the Sultán. Death of Prithiráj (I have not read the book through, but there seem to be many historical facts in it. It is worth special attention. I think I make out that Chand goes to Ghazni to seek for Prithiráj, but am not sure without fuller perusal.)

66. (67) *Rayan Si.* 116k. Náráyan Singh (familiarly Rayan Si), son of Prithiráj is duly crowned king, but is soon after killed, and Dilli sacked and everything comes to an end.

67. (68) 3k. Three supplementary kavitts about the poem itself.

68. (69) *Birbhadra.* 8k. A short supplementary chapter.

The full number of 69 books is made up by counting the two parts of book 33 separately as 33 and 34. I have indicated this method of counting by the figures in brackets.

JOURNAL OF THE ASIATIC SOCIETY.

Part I.—HISTORY, LITERATURE, &c.

No. III.—1872.

The Buddhistic Remains of Bihár.—By A. M. BROADLEY, Esq., C. S.

I. Bihār in Patna.

General Cunningham in speaking of and describing the kingdom of Magadha writes as follows: * “As this country was the scene of Buddha’s early career, as a religious reformer, *it possesses a greater number of holy places connected with Buddhism than any other province of India.* The chief places are Buddha-Gaya, Kukkutapada, Rājagriha, Kusāgarapura, Nālandā, Indrasilaguba, and the Kapotaka monastery.” Of these seven places, no less than five are situated within the boundary of the sub-division Bihār, which forms a large section of the Patna Zil’ah.

The word Bihār has in turn served to designate several artificial divisions of this part of India. The name originally belonged to the ancient city, which from its far-famed seat of Buddhistic learning was distinguished by the name ‘Bihār’ [Sanserit, बिहार]. The Muhammadan conquerors of the city extended its name to the surrounding country, of which it became the capital; and at the time of Akbar it came to signify that important portion of Eastern India comprised in the seven sirkars of Munger, Champaran, Hājipūr, Sāran, Tirlhut, Rohtās, and Bihār. This was Súbah Bihar. Under British rule, Súbah Bihar and Súbah Bengal were united under a joint government, while the Zil’ah, surrounding the capital and which bore its name, was divided into Zil’ah Patna and Zil’ah Gayá. In 1864, the important parganahs of Bihār and Rajgir were detached from the jurisdiction of Gayá, and, together with the parganahs of Tillárah, Pillich, and Biswak, formed into a sub-division, bearing the name of Bihār and within the

* ‘Ancient Geography of India,’ Vol. I, p. 455.

jurisdiction of Zil'ah Patna. Súbah Bihár, for more than a century, has ceased to exist except in name. Zil'ah Bihár has now disappeared from the map of India, and the name can now only as a matter of fact be properly applied to the ancient Muhammadan capital, founded by Bakhtyár Khilji, and the five surrounding parganahs of which it is still the chief town.

The tract of country about which I shall have to speak, extends for about thirty-five miles from north to south, and forty from east to west. With the exception of the solitary mountain rock of Bihár, the country presents an almost unbroken plain, sloping gradually from the foot of the Rajagriha Hills (which form the southern boundary of the sub-division) down to the banks of the Ganges. The greater part of this tract of country is singularly fertile, being watered by various streams which descend from the southern hills to join the Ganges below Patna. The Panchani River enters Bihár almost under the shade of the Indra-Sailapeak at Giryak, and flows south-west till it reaches the ancient city. At this point several branches of it intersect the various 'mahallahs' of the town, while the main course of the river still flows to the north, and enters the Ganges near Bárh, the chief station of a Sub-Division bearing that name, which lies between Bihár and the banks of "the sacred stream." The Panchani was once an important river. Vast sandy wastes, on either side of it, now only serve to indicate the extent of its original channel. In the summer months, the bed of the river is almost wholly dry. Not only has the current itself almost ceased to flow, but what remains of it, is almost entirely carried away into a large hollow, or "pyne" (پانی), four miles south of Bihar, in consequence of a large sand bed having formed a few miles below the town. The silting-up of this sand-bank has altered the whole appearance of the city. In exploring its outskirts, the eye often lights on a spacious bridge now spanning a rice field or a piece of waste-land, and on ruined ghats, which now only serve to bound a scorching expanse of arid sand.

The archaeological and historical interest of this narrow tract of country may be almost said to be unrivalled. It was in the midst of the rugged range of hills, which forms its southern boundary, that once flourished the mighty Kuságárapura, the metropolis of Magadha; outside its western walls, in the dark "Valley of the Five Hills," [the Ranbhúm of to-day] was fought a great battle mentioned in the Mahabhárata. Here also Sakhyá Muni—still the "Adorable Lord" of three hundred millions of men—spent a great portion of his life. Almost within a stone's throw of the northern foot of the hills are still to be seen the stately remains of New Rajagriha—Rajagriharapura—the capital of Ajata Satru, son of Bimbisára, the contemporary of Buddha. In the plain itself lie the ruins of "our holy mother Nálandá," the gorgeous Queen of Buddhistic convents, and of the less important monasteries of Tillárah, Titráwan, Ghosráwan, and Hurugáwan. Still further

north of these places lies Bihár, once the academia, or vihára, of the country south of the Ganges, and still later the metropolis of the Muhammadan lieutenants, who sometimes ruled this garden of India as the delegates of the emperor of Dihli, sometimes of the kings of Bengal.

On the 15th March, 1871, I took charge of the Sub-Division of Bihár, and ever since that time, have devoted such of my leisure as I could spare from my official duties, to the examination of the antiquities of the country, be they Muhammedan, Hindú, or Buddhistic; but in the following pages I speak only of the last; the others will, I trust, one day form the subject of separate papers. The ruins of the Nálándá monasteries have been described in a separate pamphlet, and I therefore barely allude to them here.

II. Ancient Magadha.

The name of the ancient kingdom of Magadha dates as far back as the time of the Mahabhárata. In the map of India, which illustrates Mr. Talbot Wheeler's History of these remote times, the territories of Magadha are shewn to the south of the river Ganges, bounded on one side by Mithilá and on the other by Banga, or Bengal. In the pages of the great Sanskrit epic, an account is given of the wars of Bhíma and Krishna with Jarásandha, king of Magadha; but I merely allude to it here, because I propose to write exclusively of a much more recent period in the history of India. I shall, however, from time to time be compelled to make some allusion to the great Asura king, whose history is inseparably associated by the traditions of the people with the places about which I propose to write.

Passing over a number of centuries, we come to the time when Chi-Fah-Hiyan left his home at Tchang'an in China, to "follow the footsteps" of the great sage of Magadha, whose teaching, nigh a thousand years before, had caused a new religion to spread itself with wonderful rapidity over the greater part of the continent of Asia.*

* The travels of Chi-Fah-Hiyan were first translated into French by MM. Remusat, Klaproth, and Landresse. An English version of this work was published by Mr. Laidlay, in Calcutta, in 1818. In 1869, the Rev. S. Beal published an original translation from the Chinese text. Great doubts are entertained as to the correctness of portions of the French work, and M. Julien points out that it cannot be safely used by persons unable to verify the translation by comparison with the original. Under these circumstances I make reference only to the edition of Mr. Beal.

Throughout Fah-Hian's work, distances are computed by 'lis' and 'yojanas.' Mr. Beal allows four or five lis to the mile, General Cunningham six, and this estimate is doubtless correct. As to the second measure, Mr. Beal allows seven miles to a yojana in the North-West Provinces, and only four in Magadha. General Cunningham counts *uniformly* $7\frac{1}{2}$ or 8 miles as equal to a yojana. From a comparison of the distances given in Bihár, *the very centre of the kingdom of Magadha*, I do not see how more than five or six miles can, by any possibility, be allowed, *e. g.*, Bihár to Nálándá, one yojaná, actual distance $5\frac{1}{2}$ or 6 miles; Patna to Bihár, 9

In the pages of the account which he wrote of his Indian travels, Magadha has a prominent place, no less than four chapters being occupied in the relation of his wanderings in that kingdom.* Before retracing our steps to the time of Sakhya Muni himself, I must say something of another great traveller, who, two centuries later, passed over very nearly the same route as his predecessor. On the 1st August, 629, A. D. Hwen Thsang left his home at Liang-cheu, on a similar errand to that of Chi-Fah-Hiyan,† and it is not till A. D. 644 that he again arrives in the frontiers of his native land. According to the computation of General Cunningham, he reached Magadha on February 10th, 637, and remained there till January, A. D. 639. It also appears that he revisited it during the spring of A. D. 642. The Buddhist pilgrim has bequeathed to posterity an account of his travels, and of the places and people he visited, the historical and archaeological value of which it is impossible to overrate. It is much to be regretted, that no carefully annotated English translation has as yet been prepared of these invaluable records. In this instance the French have gone before us, and it is to M. Stanislaus Julien that the world is indebted for its knowledge of the history, geography, and antiquities of India during the 7th century of our era. This eminent scholar has published two entirely distinct works on the subject, and for reasons which I shall presently state, I deem it best to give the title of them in full.

The first appeared in 1853. It is entitled “*Historie de la vie de Hiouen Thsang et de ses voyages dans l’Hinde depuis l’an 629 jusqu’en 645, par Hœi-li et Yen-Thsang, suivie de documents et d’éclaircissements géographiques tirés de la relation originale de Hiouen Thsang, traduite de Chinois par Stanislaus Julien.*” The second was published at Paris five years later, and bears the title “*Mémoires sur les contrées occidentales, traduit du Sanscrit en Chinois en l’an 648 par Hiouen Thsang, et du Chinois en Français par M. Stanislaus Julien.* Paris 1857.”‡

yojanas, actual distance about 54 miles; Nālandā to Rājgir, one yojana, actual distance, $5\frac{1}{2}$ or 6 miles. For these reasons I consider a yojana as equivalent to a distance of between 5 and 6 miles.

* Beal’s ‘Fah-Hiyan,’ pp. 102-119.

† Cunningham’s ‘Ancient Geography of India,’ p. 563.

‡ The following will shew the discrepancies between both editions, as far as Magadha is concerned—

I.—“*Histoire de la vie de Hiouen Thsang,*” 1853.

From	To	Distance	Direction
Pātaliputra	Tilāçakya	7 Y.	S. W.
Tilāçakya	Bodhidrouma	100 L.	S.
Bodhidrouma	Nālandā	7 Y.	?
Nālandā	Rājgriha	?	?
Rājgriha	Indrasaila guha	30 L.	E.
Indrasaila guha	Nalandā	?	?

It would be impossible to overrate the vast importance of these records, and the travels of Fah-Hiyan and Hwen Thsang will form as it were the basis of my attempt to describe the Buddhistic remains of this part of the kingdom of Magadha. We can now go back to the time of the great founder of the Buddhist faith, and see how deeply connected Magadha was with many of the most important episodes in his life.

Buddhism arose in India about the beginning of the sixth century before Christ. Its founder was Sákhyá Muni, son of Suddhodana, ruler of the country of Kapila, which appears to have been situated some distance to the north of Banáras. The tenets of his religion may be shortly summed up as follows.* I.—That man may become superior to the gods. II.—That Nirvána† is the supreme good. III.—That religion consists in a right preparation of the heart (suppression of evil desire, practice of self-

II.—“Mémoires sur les Contrées Occidentales,” 1857.

<i>From</i>	<i>To</i>	<i>Distance</i>	<i>Direction</i>
Pátaliputra	Tilāçakya.	100 L.	S. W.
Tilāçakya	Gunamati Mt.	90 L.	S. W.
Gunamati convent	Silabhadra convent on isolated hill.	20 L.	S. W.
Convent of Silabhadra	Gayá.	40 L.	S. W.
Gayá.	Kukkutapáda M.	100 L.	E.
Kukkutapáda M.	Buddhavana M.	100 L.	N. E.
Buddhavana M.	Yachtivana Forest.	30 L.	E.
Yachtivana Forest	Sources Thermales.	10 L.	S.W.
Yachtivana Forest	A mountain.	7 L.	S E.
This mountain	Another.	3 or 4 L.	N.
This one	A third.	4 or 5 L.	N.E.
This mountain	Kouçágárapura (old Rájgir)	16 L.	E.
Rájgriha	Nálanda.	30 L.	N
Nálanda	Kulika.	9 L.	S.W.
Kulika	Kalapináka.	20 L.	S.E.
Kalapináka	Indra saila gouha.	30 L.	E.
Indra saila gouha	Kapotika Sangháráma.	150-61 L.	N.E.
Kapotika-Sangháráma	A monastery.	40 L.	S.E.
This monastery	A village south of the Ganges.	70 L.	N.E.

It would be an almost endless task to attempt to point out the discrepancies which exist between these two accounts, much more so to convey a satisfactory explanation of them, but I have stated them in the onset to shew the extreme difficulty of a satisfactory or positively correct identification of the places alluded to, and to demonstrate how little we can trust the distances and directions which form the only data on which we can rely.

* Beal, Introduction, p. 49.

† I. e., exemption from sorrow, complete unconsciousness of, and indifference to, external objects.

denial, active benevolence). IV.—That men of all castes and women may enjoy the benefits of a religious life.

The religion, of which these are the principles, spread from the mountain solitudes of the Rájgir Hills to the remotest parts of Eastern Asia, and is at the present day professed by no less than three hundred millions of human beings. I have not the slightest intention to dwell even for a moment on the details of the Buddhist creed, which have been so eloquently and clearly explained and illustrated by Messrs. Beal, Alabaster, and Bishop Bigandet, and shall only allude to them again when I come to speak of the causes of the ultimate decay and overthrow of the Buddhist faith in Hindústán.

All writers who have attempted to gather together the half historical, half mythical, facts connected with the life of the great sage of Magadha, have agreed in naming Rájgir and Nálándá as the scene of many of the episodes of his history.

It appears that at the very commencement of his religious career, he was attracted by the wild mountain solitudes which surrounded the Magadha capital. Alabaster, in his translation of the Siamese Life of Buddha,* gives the following poetical account of his arrival at Rajagriha. ‘He entered the city, and visited each house he came to, that he might receive alms. Astounded at his beauty, the people crowded round him, wondering who it might be. Some said, “Surely it is the moon flowing from the Rávanáso Asura Rahu, how else can we account for his radiant glory?” Others made other guesses, and they could come to no conclusion. So they went and told the king Bimbisára, king of Rájagriha, that there was a being in the city whose beauty made them doubt whether he were not an angel. Then the king, looking from a window of the palace, saw him, and, filled with astonishment, gave orders to ascertain who he might be, saying, “Follow him! If he is not a human being, when he leaves the city, he will disappear; if he is an angel, he will fly through the air; if a snake king, he will sink into the earth; but if a man, he will remain and eat his food.”

‘The grand being that was approaching the Buddhahip, calmly continued his work, regarding but the small space of earth close around him; and having collected sufficient food, he left the city by the same gate he had entered it.

‘He passed on to the Banthawa Hills, and sitting down on the summit of a lofty rock, he looked at the food collected in his pan.

‘He—who had ever been accustomed to the most dainty meats, the most refined delicacies—looked at the mixed mess in his pot and loathed it; he could scarcely swallow it. Yet even this caused no wish to return to his city and his palace.

* P. 135.

‘He reflected on the foulness of his own body, and ate without further aversion. He finished his meal, rinsed his mouth, washed his pan, and replaced it in his wallet, and seated himself in a position of contemplation on the rocky cliff.

‘Then the officers who had been set to watch him, returned and told king Bimbisára that he was certainly a man; and the king desiring to converse with him, called for his royal palankeen, and attended by a great train of noblemen and soldiers, went forth to seek him at the Banthawa Hills.

‘Sitting on a rocky slab, the king gazed with delight at the grand being, and observed the grace of his manners and thus addressed him :

“Man of beauty, whence comest thou?”

‘Most excellent lord, I come from the country of Sákya.’

“From what Sákya country?”

‘From the royal city, Kapila.’

‘The king continued to question him as to his caste, family, and name, and was informed in answer, that he was of the royal race (caste) of the Sákya, the son of king Suddhodana and named Siddhartha.

‘Now king Bimbisara and the prince Siddhartha were on most friendly terms. Though they had never met, and did not know each other by sight, they were in the constant habit of exchanging presents as tokens of good will, and when the grand being announced his name, the king was assured, beyond all doubt, by his admirable manners and language, that it was none other than his friend.

‘He reflected that perhaps the prince had fled from his country on account of some family quarrel, and under that impression, he invited him to share his power—to rule over half the great country of Magadha. Then the grand being told him the reasons, the object for which he had resigned the empire of the world. He told him of the four sights which had influenced his thoughts, and of his determination to achieve the omniscient Buddhahood. And the king having obtained from him a promise that after the attainment of omniscience, he would first teach in Rajagriha, did homage, and returned to his city.’

In Dr. Bigandet’s *Life of the Burmese Buddha*, we find a great deal more allusion made to Rajgir than in Mr. Alabaster’s translation from the Siamese.* He tells us that Buddha set out for Rájgir [Radzagio], and halted in a grove of palm trees a short distance from the city, where he was met by Bimbisara [Pimpattara] at the head of 120,000 warriors, to whom he delivered a religious discourse. Next day he made a triumphal entry into Rajgir. “Then Pimpattara, king of Magaritz [Magadha], thought within himself of the thing which could prove acceptable to Phra, in order to offer it to him. He said within himself: my garden, which is situated

* P. 101, etc.

near the city, would doubtless be a very fit place for Buddha and his followers to live in, as it lies not far from the city; it would be a place of easy resort to all those who would feel inclined to visit Buddha and pay him their respect; it is moreover far enough, that the noise and cries of the people could not be heard therein; the place is peculiarly fitted for retreat and contemplation; it will assuredly prove agreeable to Buddha. Whereupon he rose up, and holding in his hand a golden shell, like a cup, he made to Phra a solemn offering of that garden, which was called Weluwana. Gaudama remained silent in token of his acceptance of the gift. He preached the law and left the palace. At that time he called his disciples and said to them, "Beloved Rahans, I give you permission to receive offerings."

He next proceeds to recount the conversion from schism of Sāriputra [Thariputra] and Mogalan [Mankalan], who subsequently became the chief disciples of Buddha. After this event, Buddha continues to preach, teach at the Kalandavanonvana Vihāra,* but at last yields to the frequent messages of his royal father and returns to Kapila.† The next chapter, however, is devoted to legends connected with his three years' stay at Rājagriha, *i. e.*, the dedication of the Dzeta-woon [?] monastery, the miraculous cure of Djvika, and the avarice of Mogalan. In the succeeding chapter we learn that Buddha spent the 11th season of his religious life at Nalandā, and 17th and 20th again at Rājagriha. After this Sariputra set out for his native place Nalandā, to enter into that state of unconsciousness—the much-longed for Nirvana—which formed the consummation of religious life. I quote Bigandet's translation of this part of the biography, as a specimen of Buddhist writing, and as peculiarly interesting on account of its close connection with the ruins of the great Nalandā monastery.

'It was little before dark when the great Rahan arrived at the entrance of the Nalaka village. He went to rest at the foot of a banian tree close to that spot. At that time there came a young man, his nephew, named Ooparewata, who perceiving Thariputra bowed down before him and stood in that place. The great Rahan said to him: "Is your grandmother at home?" Having been answered in the affirmative, he continued addressing him: "Go now to her and tell her to prepare for me the room wherein I was born, and a place for these five hundred Rahans that accompany me. I will stay for a while in the village, and will go to her house, but this evening. The lad went in all haste to his grandmother's house and said to her: "My uncle is come, and is staying at the entrance of the village." "Is he alone,"

* Beal, p. 117, note. Although he states the monastery to be called in Singalese (as in Burmese) Weluwana, he supposes it to have been the gift of a rich landowner, Kalanda. The Burmese text, however, states distinctly that it was the religious gift of Buddha.

† Bigandet, p. 120.

inquired the grandmother, "or has he with him a numerous retinue? For what purpose is he coming here?" The young man related to her all the particulars of his interview with his uncle. Nupathari, the mother of Tháripútra, thought within her self: perhaps my son who has been a Rahán from his youth, desires in his old age to leave his profession. She, however, gave orders to have the desired room cleaned, and a place prepared for all his attendants.

'In the evening the great disciple went to his mother's house with all his followers. He ascended to the room prepared for him and rested therein. He bade all the Raháns to withdraw and leave him alone. They had scarcely departed when a most violent disease seized Tháripútra, which caused an abundant vomiting of blood, so great indeed, that the vessel wherein it flowed could not hold it. His mother, at the sight of such an awful distemper, did not dare to approach, but with a broken heart retired into her own room, leaning against the door. At that time four great Náts, a Thágiá, their chief, and four Brahmas came to see him, and to minister unto him, during his painful illness, but he bade them retire. His mother seeing the coming in and going out of so many distinguished visitors, and the respect they paid to her son, drew near to the door of his room and calling the faithful Tsanda, inquired from him wherefore so many distinguished individuals had come. Tsanda explained to her that the great Náts, the chief of Thágiás, had come to visit and assist her son, and enjoy the presence of the great Rahán.

'Meanwhile he informed the patient that his mother wished to see him. Tháripútra replied that the moment was not a proper one, and asked from his mother the motive of her untimely visit. "Beloved son," said she, "I am come here to contemplate your ever dear countenance. But who are they, those that have just come to see you?" Tháripútra explained to her how he had been visited by Náts, Thágiás, and Brahmas. His mother inquiring from him if he were greater than any one of these, he hesitatingly replied that he was more excellent than any of them. His mother thought within herself: if my son be so exalted, how much more must Buddha be. Her heart was then overflowed with the purest joy.

'Tháripútra rightly understood that the moment had come to preach the law to his mother. He said to her: "Woman, at the time my great teacher was born, when he obtained the supreme intelligence and preached the most excellent law, a great earthquake was felt throughout ten thousand worlds. No one has ever equalled him in the practice of virtue, in understanding, wisdom, and in the knowledge of, and the affection for, the transcendent excellencies of the state of a rahat." He then went on explaining to her the law and many particulars relating to the person of Buddha. "Beloved son," said his mother, delighted with all that she heard, "why have you

been so late in acquainting me with such a perfect law?" At the conclusion of the instruction, she attained the state of Thantapam. Thâriputra replied: "Now, woman, I have repaid you for all the labours you have bestowed on me in bearing, nursing, and educating me; depart from me and leave me alone."

Thâriputra inquired from the devoted Tsanda whether the moment had come. Having been informed that it was daylight, he requested to be set up. By his order all the Rahans were called to his presence, and he said to them, "During the last forty-four years you have ever been with me; should I have offended any one during all that time I beg to be pardoned." The Rahans answered him:—"Great teacher, we have lived with you during the last forty years, and have been your inseparable attendants, following you everywhere, as the shadow follows the body. We have never experienced the least dissatisfaction from your part, but we have to request your forbearance and pardon for ourselves."

'It was on the evening of the full moon Satsaongmon (November) that Thâriputra went to his mother's place, and laid in the room wherein he had been born. During the night he was attacked with the most distressing distemper. In the morning at daylight, he was habited with his tsiwaran and made to lie on his right side. He entered into a sort of ecstasy, passed successively from the first state of Dzân to the second, third, and fourth, and thence dived into the bottomless state of Nibân, which is the complete exemption from the influence of passion and matter.'

After the death of Buddha, his relics were brought to Râjgir and buried there by the reigning prince. The following account of their reception at the capital of Magadha is given in Bishop Bigandet's translation of the Burmese life of Buddha.* 'King Adzâtathat ordered a beautiful and well levelled road, eight oothabas broad, to be made from the city of Kuthinanan to that of Râdzagio. The distance is twenty-five youdzanas. He wished to adorn it, in all its length, in the same manner as the Malla princes had done for the road leading from the place that had been decorated with all sorts of ornaments, to that where the relics had been deposited. At fixed and proper distances, houses were built for resting and spending the night. The king attended by a countless crowd of people, went to take the relics and carry them into his country. During the journey, singing, dancing, and playing of musical instruments went on uninterrupted. Offerings of perfumes and flowers were incessantly made by the people. At certain intervals, they stopped during seven days, when fresh honors were paid to the relics, in the midst of the greatest rejoicings. In this manner, seven months, and seven days were employed in going over the distance between the two countries. At Radzagio, the relics were deposited in a place prepared for that purpose, and a dzedi was erected on them. The seven other kings built also dzedis

* P. 212-14.

over the relics they had obtained. Daima built one, too, over the golden vessel, and the Maurya kings erected likewise one religious monument over the coals. Thus there were at that time ten dzedis.

When this was all over, the great Kathaba fearing yet for the safety of the precious relics, went to king Adzatatath and said to him that precautions were to be taken for securing the preservation of the relics. The king asked him by what means all the relics could be had from those who had obtained them. Kathaba replied that he would know how to manage such a delicate affair. He went to the seven kings who gave to him all the principal relics, keeping by themselves only what was strictly necessary to be deemed an object of worship and goodwill towards Buddha's person. One exception was made in favour of the relics deposited in the village of Rama, because they were, in future times, to be carried to Ceylon and placed in the great Wira or Pagoda. All the relics having been brought to Radzagio, Kathaba took with him the relics and went out of the city. He directed his steps in a south-east direction, loaded with this precious burthen, which he carried all the way. Having reached a certain spot, he made the following prayer: "May all the rocks and stones of this place disappear, and there be in place thereof a fine sandy desert or soil; may water never issue from this spot." Adzatatath ordered the soil to be dug very deep; with the earth, bricks were made and eight dzedis were built. The depth of the hole was eighty cubits. Its bottom was lined with iron bars. To that bottom was lowered a monastery made of bars, similar in shape and proportion to the great Wira of Ceylon. Six gold boxes containing the precious relics were placed in this monastery. Each box was enclosed in one of silver, the latter in one adorned with precious stones, and so on, until eight boxes were placed in the other. There also were arranged 550 statues, representing Buddha in 550 preceding existences, described in the sacred writings, the statues of the 80 great disciples, with those of Thudandana and Maia. There also were arranged 500 lamps of gold and 500 lamps of silver, filled with the most fragrant oil, with wicks made of the richest cloth. The great Kathaba taking a leaf of gold, wrote upon it the following words:—"In after times, a young man named Pradatha shall ascend the throne, and become a great and renowned monarch under the name of Athanka. Through him, the relics shall be spread all over the island of Dzapondeba." King Adzatatath made new offerings of flowers and perfumes. All the doors of the monastery were shut and fastened with an iron bolt. Near the last door, he placed a large ruby upon which the following words were written:—"Let the poor king who shall find this ruby, present it to the relics." A Thágia ordered a Nat to watch over the precious deposit. The Nat disposed around it figures the most hideous and terrifying, armed with swords. The whole was encompassed by six walls made of stones and bricks; a large slab of stone, covered the upper part and upon it he built a small dzedi.

At the time of Buddha's death Ajātasatru, the son of Bimbisāra, was reigning in Rājgir. According to Hwen Thsang he had transferred his capital from the old city in the valley of the five hills, which, as the Burmese writer expresses it, "surrounded it like a cow-pen, to a new town in the open plain just outside the ravine which led to the metropolis of his forefathers." The translator of the Life of Hwen Thsang* gives the following account of the circumstance which led to the change alluded to.

'Dans l'origine, lorsque le roi Pin-pi-so-lo (Bimbisāra) résidait dans la ville Chang-maokong-teh'ing (Kouçāgarapoura), la population était fort nombreuse, et les habitations, pressées les unes contre les autres, eurent souvent à souffrir des ravages du feu. Le roi rendit alors un décret qui menaçait ceux qui faute d'attention et de vigilance, laisseraient prendre le feu dans leur maison, de les transférer dans la Forêt froide (Ustavana). Dans ce royaume on appelle ainsi un lieu abhorré où l'on jette les cadavres Omacamam, (un cimetière). Mais peu de temps après, le feu prit dans le palais. Le roi dit alors : "Je suis le maître des hommes ; si je viole moi-même mes propres décrets, je n'aurai plus le droit de réprimer les écarts des mes sujets."

'Le roi ordonna alors au prince royal de rester à sa place, et alla demeurer dans la Forêt froide (c'est-à-dire dans le cimetière). Pendant ce temps-là, le roi de Fei-che-li (Vaçali), ayant appris que Pin-pi-so-lo (Bimbisāra) habitait en dehors de la ville, dans une plaine déserte, voulut lever des troupes, pour s'emparer de lui par surprise.

'Les officiers placés au loin en observation en ayant été informés firent un rapport au roi, qui construisit alors une ville fortifiée. Comme le roi avait commencé à habiter dans cet endroit, on l'appela pour cette raison Wang-che-teh'ing (Rājagriha-poura) ; c'était précisément la ville nouvelle. Dans la suite le roi Che (Ajātasatru) lui ayant succédé, y établit sa cour. Elle continua à servir de résidence royale, jusqu'à l'époque où le roi Açoka, ayant transféré sa cour à Pe't'oli (Pāṭali-poutra), donna cette ville, on ne voit point d'hommes de diverses croyances ; il n'y a plus que des Brâhmanes, qui forment un millier de familles.'

After the death of the great founder of the Buddhistic faith, Kasyapa, on whose shoulder the mantle of the primacy seems to have descended, convened the first great council of monks who had attained the Rishatship, or highest degree of sanctity, in a hall facing the Sattapani cave, which appears to have been situated in the northern shade of Mount Baibhâr. Under the direction of the president, the whole canon of Sakhya Muni's teachings was recited. To the convening of this council Ajātasatru lent his aid. He is said to have gained the throne by staining his hands in his father's blood some years before the Nirvāna of Buddha, and to have subsequently extended his dominions to Kapila, Kosali, and Wesali. Any detailed ac-

count of the proceedings of Mahá Kasyapa, and his sacred conclave, is quite beyond my province, but I may incidentally mention that both Fah Hiyen and Hwen Thsang say something on the subject.

New Rájgir seems to have enjoyed a brief existence as the capital of Magadhá; for a century later, Asoka appears to have transferred the seat of government to Pátali, a town clearly identical with the Palibothra of the Greeks and the modern Patna of the Hindús and 'Azimabád of the Muhammadans.

I have not endeavoured in the foregoing pages to write a connected history of Buddha's life in Rájgir, or to give a complete account of the rulers of that city; but my object has been simply to show the intimate connection of the Maghada of those days, and the Bihár of the present, with the earliest days of the Buddhistic faith. This connection once established and shewn, the extreme interest and importance of the Buddhist remains of this part of the country becomes apparent. They are important to the historian as throwing light on annals of a remote period, and still more important to the archaeologist as illustrating the manners and customs, the costume and ceremonies of another age, and as throwing light on the details of a religion which has passed to other climes. Whatever historical incidents remain untouched, I shall speak of when I come to write of the places with which they are connected, of Tillárah and Bihár, of Ghosráwan, Titráwan, and the Indra-Saila Hill.

III. Buddhist Remains.

The relics of Buddhism still existing in Bihár may be divided into five groups:—(1) Ruins of Temples. (2) Those of Monasteries, or Viháras, (3) Votive Stúpas. (4) Figures and sculptures. (5) Inscriptions.

First.—The temples seem to have varied in size and splendour at different epochs in the history of the religion to which they belong. Amongst the earlier temples are those of Rájgir, Dápthú, and the Indra-Saila peak, and amongst the more modern, those of Bargáon. The most ancient of the temples are remarkable for the extreme simplicity of their construction. They usually consisted of an outer court, varying in size from fifteen to twenty-five feet, the walls of which were composed of enormous bricks of rare solidity. The roof of the building was generally nine or ten feet high, sometimes more, sometimes less, and consisted of slabs of granite or other stone, placed close to each other, and supported by pillars of the same material. The capitals of the pillars were generally separate from the shaft, and of such size and form as to render the weight of the roof less difficult to sustain. Their shape was generally either cruciform or oblong. This court generally led to an inner chamber or shrine, smaller and less lofty than the vestibule, but of similar shape and construction. In the centre of this is generally to be found the figure of Buddha. Carvings were often arranged round the walls of

the outer appartment, but apparently merely for the purpose of ornament. The roof was generally covered with brick and probably surmounted by a low cupola or turret of the same material. The lintels, &c., of the doorway were generally composed of basalt slabs, rudely carved with a bold geometrical pattern, having one or more figures of Buddha in the centre. The brick work appears uniformly to have been plain, but remarkably uniform, the outside edges being reduced to a level by the chisel. As an illustration of the older type of Buddhist temple I may mention the large one discovered by me in the side of the Baibhâr hill at Râjgir. A great number of the pillars are *literally imbedded in the brickwork of the wall*. This feature is also observable in the excavated building at the Nirmal-kund, and the series of temples at Dâphtû. The more modern temples present a striking contrast to the more ancient ones. The walls of these buildings were adorned with the most exquisitely moulded brick work; the façade was lavishly ornamented with pillared vestibules, and the richest sculptures which art could produce; the roof was crowned with a majestic spire or cupola abounding in profuse decoration in brick, plaster, and basalt; and the doors and windows were surrounded with bands of lace-like carving. The excavated temple at Bargâon affords a striking example of the religious architecture of the Buddhists from 450 A. D. to 900 A. D. I extract a description of it from the pamphlet I have already written on the subject.

‘Raised a few feet above the plain was an evenly paved court, as near as possible one hundred feet square. This court was surrounded by halls and buildings of every description on all sides except the eastern, and these doubtless served as the dwelling-places, refectory, &c., of the recluses of the convent. In the centre of the court rose an enormous temple, eighty feet long at the base on each side, and consisting of a series of several stories tapering to a point, each about fourteen feet above the other. The main fabric was composed of enormous bricks, each about one foot three inches in length, three inches thick, and ten inches wide, placed so close together that the cement which joined them is barely visible. The first two stories of the building were uncovered, and are now almost as perfect as when Hwen Thsang saw them fourteen hundred years ago. In order to preserve every detail in describing this remarkable building, we will take it side by side. The great entrance was towards the east (a custom still observed in the construction of the Buddhist temples of Tibbat), and was faced by a terrace of stone fifty feet in length and composed of two rows of sandstone slabs, the first decorated by a simple triangle in the centre, the second carved with a very beautiful geometrical pattern. These stones vary in length from seven to three feet, and are as near as possible a foot square. In the centre of this terrace, which is about six feet in front of the main building, is a

flight of three steps exactly ten feet in length. The first court was of very considerable proportions, fifty feet by twenty-six, and was covered by a stone roof supported by a series of twelve large pillars. These columns rested first on a rough pedestal of unhewn stone which disappeared beneath the floor, and then on a cruciform base, also separate from the pillar itself, but joined to it by a stone plug six inches long, one end of which pierced the former, while the other was imbedded in the centre of the latter. Two of these pillars were recovered by me intact, and are of the most elaborate workmanship. The cruciform base measures three feet each way, and the four arms are uniformly carved with a curious pattern. The shaft itself is seven feet eight inches high, of which one foot nine inches are taken up in the capital. The upper half of this consists of a simple square, and the latter of an oval band of a rich lace-like pattern. The rest of the pillar, down to one foot ten inches of the lower end, where it again has a third base of oblong shape, is oval, having a circumference of three feet eight inches, and ornamented at regular distances by two bands of carving about twelve inches wide. Each band consists of two parts, the first exhibiting a row of flowers strongly resembling heraldic roses, and the second a series of gargoyle-like faces* which form a peculiar feature in Buddhist ornamentation, and which is employed and re-produced at every possible opportunity. On each side of this covered terrace, but several feet behind it, is an elaborate brick moulding, fourteen feet long and six and a half feet high, surmounted by a narrow terrace of the same material, approached on either side by three steps from the pillared court. This moulding has sixteen turns, and is of the most graceful appearance. On each side of the entrance court, and above the narrow terrace, the main wall is still standing ten feet high. On the west side of the court was the great entrance door, which was uncovered by me perfect, but was thrown down in my absence by the workmen, who imagined I wished to remove the whole edifice to Bihâr. This doorway was of extraordinary beauty, and measured twenty feet across and more than twelve feet high. It was composed of a series of eighteen slabs, nine on each side, gradually lessening in height towards the centre, where they terminated in a narrow portal, hardly three feet wide, and surmounted by a heavy slab decorated with elaborate carving. The whole of this enormous mass of sculpture rested on three great stones, two and a half feet square and twenty-two feet in length. Each slab was joined to the next one by a strong iron clamp, and the upper portion of each was joined to the lower in the same manner. The first two stones on either side were devoid of all ornament and were placed nearly a foot behind the other slabs. The next pillar of the series (or rather what remained of it intact) was eight feet in height, twelve inches broad, and of enormous thickness. The first slab was of light brown

* See plate, Proceedings, Asiatic Society, Bengal, February, 1872, p. 32.

colour and of a soft and pliable nature, whereas this one resembled the hardest granite and presented a curious variety of appearance and colour. The base of it is plain, and above it is a grotesque kneeling figure with a long beard and hands uplifted, supporting a canopy, above which rises a long line of geometrical pattern. The third slab is of black basalt and is scarce four inches wide. It is taken up entirely by the representation of two enormous snakes, one twining round the other. The next stone is of the same material, and is of unusually elaborate workmanship. A winding stem of flowery pattern work covers its face, and from each side of it springs a lotus-like flower, which alternately forms the resting place of a mystic bird or elephant rampant. The fifth slab* is plain. The sixth pillar is ornamented at the base with a female figure eight inches high, from whose hands spring a winding branch of foliage and flowers which stretches to the top of the lintel. The seventh slab is a repetition of the third, and the eighth is of the same stone as the second, containing three large female figures, one above the other, each about one and a half feet high, and in the hands of each is seen a musical instrument similar in shape and size to the modern 'sitar.' The ninth stone has a simple beading, and is surmounted by a heavy slab covered with carving. The two last slabs of the series, together with the one which covers them, form the doorway which leads to the inner part of the temple. The magnificent gate led to the second hall, twelve feet wide and eighteen feet long; and on each side of this chamber were smaller octagonal rooms, from the western end of which a staircase lead to the terraces above. These were approached by narrow doors right and left of the great gateway. These rooms were evidently of great height, and were decorated by elaborately carved pannels of sandstone let into the brick-work. I have added a series of these to my own collection. One of these consists of a slab of Mirzápúr stone covered with the most elaborate design, the chief feature of which is two figures with arms and legs entwined. The colour of the stone is peculiarly beautiful. Another is of black basalt, and represents a large elephant, richly caparisoned, with a lotus flower in its mouth. Beyond this, one enters by another door an inner chamber twenty-two feet square, the walls of which are in their ruined state still fourteen feet high. This was doubtless the *sanctum sanctorum* of the building, and I discovered at its western end a headless Buddha four feet high, placed on a handsome 'singhásan,' or throne, of black basalt, and was divided into five compartments; the first on each side containing single figures, the next lions-couchant, and the one in the centre two devotees in the act of making an offering. The wall is eighteen feet thick on either side.

* Its base contains an inscription. Bábú Rájendrakála Mitra makes the date 'Sambat 856,' and Professor Rám Gopál Bhandakár 'the eleventh year of the reign of King Mahá pála Deva.'

The higher stories and roofs have toppled over on the northern side, and from an examination of their remains, it is clear that the building consisted of at least five stories, surmounted by a spire or minaret, (not by a cupola,) at least two hundred feet high in all.

The excavation of the western side is the most perfect of all. The upper story is about sixty-three feet long, and is exactly twelve feet above the lower one, which is eleven feet wide. The wall of the high terrace is quite plain, decorated merely by a simple moulding about three feet from the base. The stories consist of solid brick, and not of chambers as I first imagined. This I ascertained by making a perforation six feet deep in its centre. Not quite in the centre of the building is an irregular protuberance, twenty-two feet wide and twenty-seven feet long. I at first imagined it to be a portico, but on closer examination, I think it must have been a mere support, built up to sustain the weight of the upper stories when they showed symptoms of decay; for on removing the great portion of it (December 5th and 6th) the pilasters, mouldings, and statues which decorate the wall of the lower terrace were found entire behind it. In fact this protuberance seems so singularly out of place, that I should have imagined it to have been a portion of the ruins of the upper stories, had not the existence of regular walls precluded the possibility of such being the case. The ornamentation of each of these sides consisted of a series of mouldings and niches filled with stucco figures of Buddha in various positions. After the removal of the protuberance above mentioned, the west side presented the following appearance. At the base a moulding of brick-work, five feet three inches high, having thirteen distinct turns. The moulding runs along the whole façade. After the first six feet, it recedes a foot and continues in the same line for eighteen feet, when it again advances a foot, and continues in that line for eight feet, when it again recedes to the former line, and so on. Above the moulding is a series of niches two feet ten inches wide and three feet three inches high. These niches are separated by pilasters about four feet six inches high. These pilasters have plain square bases, and a three-sided shaft, each shaft being somewhat semicircular in form, above this is a square moulded capital. Above the niches are projecting bosses of brick, lotus-shaped, protruding from the wall, and above these another moulding similar to that below. The niches are surmounted by *arches* of over-lapping brick, and each contained a figure in plaster. The original bricks are moulded with exquisite exactness, and present great variety of patterns; some of the pilaster bases, for instance, containing figures, &c., in different portions fitted together. The temple has evidently twice at least been covered by a coating of plaster moulded into different forms, but as a rule greatly inferior to the workmanship of the brick underneath. The southern side is precisely similar to the western. On the top of the terrace, which doubtless ran round the three

sides of the temple, was a verandah, and the sockets of the beams are still visible in the upper wall. The southern side still stands more than thirty feet high.

In order to get a more complete idea of the lofty cupola which doubtless once surmounted the temple of Baláditya, I have since cleared away a great part of the rubbish in the northern side of the temple, and have been thus enabled to design a restored elevation of the whole building. I have also procured an illustration of the great doorway, which is of the greatest archæological and architectural interest.

Although there was little variety in the Buddhist architect's design, it was peculiarly graceful and calculated to produce a pleasing and majestic effect. The gargoyle face, the almost endless repetition of the figure of Buddha, the quaint niches and the long lines of lotus leaves, formed a *tout ensemble* which Hindú art has never surpassed. Of the minor sculptures which decorated this and similar religious edifices, a full description will be given when I come to speak of the different localities in which they were found.

The pillars which formed one of the chief features, both in the buildings and in the monasteries, became more and more elaborate as knowledge and art increased.

Secondly.—The monasteries appear to have been quadrangles of brick buildings (similarly ornamented to the temples), and generally having a pagoda in the centre. According to Hwen Thsang's account, they must have been very magnificent. Little idea can be gained of the form, &c., by an inspection of the ruins; for the wood carvings and tiles have of course disappeared under the ravages of time. The monasteries were almost invariably situated in picturesque positions on the banks of ponds of the clearest water, and surrounded by groves of mangoe, banyan, and pipal trees. They appear to have been generally built a short distance from the villages to which they belonged. Any further description is unnecessary, as I shall dwell very fully on all monasteries of Bihár, when I come to speak of them separately.

Thirdly.—*Votive Stúpas.* The subject of these most interesting monuments of the Buddhist faith has been clearly and briefly summarised by Herr Schlagintweit.* He writes—"The ancient stúpas were originally meant as receptacles for relics of either the Buddhas or the Bodhisattvas, and the kings who encouraged the propagation of the Buddhist faith. But already in the early periods of Buddhism stúpas were constructed *ex voto* as symbolical substitutes for a tomb with a sacred relic, either for marking the spot where remarkable incidents in the sacred history had taken place, or for decorating the Viháras and temples. Their erection is considered as an act

* Buddhism in Thibet, p. 193.

of devotion and reverence paid to the Buddhas, and was recommended already in the ancient legends as a most meritorious work."

Few places in India are richer than Bihār in Buddhistic stūpas and chaityas; and I have ventured to classify them as follows:—

I.—Stūpas actually containing relics of Buddha or his disciples.

II.—Stūpas containing no relics, but built to mark the occurrence of some event memorable in the history of the faith.

III.—Stūpas and Chaityas purely votive, most of them serving as the repository of images.

IV.—Chaityas, or miniature stūpas, not built, but carved in one or more blocks of stone, and generally covered with ornamentations and figures of Buddha.

On the back of a figure of Buddha in the Titrawān ruins, I found a well-executed drawing of a stūpa which I append as an illustration. The form of the stūpa varied little, whatever class it belonged to. They seem to have been generally surmounted by a series of umbrellas. The large tope at Nālandā, and the tumuli to the west of the walls of Rājagriha belong undoubtedly to the first class; but their extreme antiquity (not less than 2200 years) makes it doubtful if any thing could be found there, to say nothing of the frequent removals and abstractions of the relics we read of. I have sunk a shaft in the second tumulus at Rājgir; but without success, the labourers cutting through a solid deposit of bricks to a depth of fifteen feet. The topes on the summits of the hills, on the contrary, are of the second class, and in all probability served to mark some of the most sacred episodes in the history of Sakhyā Muni; *e. g.*, his sitting on the Bantlāwan Hills with the bhikshu's bowl, etc., etc. The small topes discovered by me in the staircase or causeway leading to the Deoghāt Hill, I imagine, served chiefly for the deposit of images of Tathāgata. It will be seen that on opening one of them, I found three perfect figures, of equal size, differing only in position, imbedded in the ruins. The small chaityas vary in size, and were doubtless made to suit the purses of those whose means did not permit them to raise a lofty mass of brickwork "for the advancement of the highest knowledge amongst mankind." Some of them are circular, some octagonal, some twelve-sided, some oval; but nearly all of them are richly ornamented and bear several figures of Buddha. A very fine circular chaitya found by me at Kurkihar, the Kukkuṭapada of Hwen Tsaung, contains more than forty figures of Buddha, all carved with wonderful sharpness and delicacy. The chaityas which were composed of a number of pieces linked together, must have contained as many as 500. These chaityas were originally surmounted by umbrellas, which were formed very frequently of separate pieces of stone, often possibly of metal, fitted into the top of the carving. The Buddhist images contain numerous illustrations of these chaityas, and I have, in some

instances, counted as many as sixteen or twenty umbrellas, arranged one above the other. The chaityas vary in height from four inches to two feet. I have about twenty-five distinct varieties in my own collection. Buddhism has now-a-days disappeared even in tradition from the minds and recollection of the people of Bihár, and the dedicatory chaityas of the pious followers of Tathágata are commonly supposed to be nothing else than a different form of the sacred *linga* of the Hindús.

The question of stúpas is thus treated by Bishop Bigandet.* ‘The religious edifices that are to be met with, in all parts of Burnah, deserve a particular notice. They are called ‘dzedis’ in all the Buddhist writings of the Burmese; but the people generally mention them by the appellation of Payas or Phras, which, in this instance, is merely an honorific title of a religious character.

‘Dzedis, in the earliest days of Buddhism, were sacred tumuli, raised upon a shrine, wherein relics of Buddha had been deposited. These structures were as so many lofty witnesses, bearing evidence to the presence of a sacred and precious object, intended to revive in the memory of the faithful the remembrance of Buddha, and foster in their hearts tender feelings of devotion and a glowing fervour for his religion.

‘From the perusal of this legend, it seems that dzedis were likewise erected on the tombs of individuals, who, during their lifetime, had obtained great distinction by their virtues and spiritual attainments among the members of the assembly. Buddha himself ordered that a monument should be built over the shrine containing the relics of the two great disciples, Tháriputra and Mankalan. In Burnah no dzedis of great dimensions and proportions have ever been erected on the ashes of distinguished phoungies. In some parts, however, particularly in the upper country, there may be seen here and there some small dzedis a few feet high, erected on the spot where have been deposited the remains of some saintly personage. These monuments are little noticed by the people, though on certain occasions, a few offerings of flowers, tapers, &c., are made around and in front of them. The same kind of religious edifices have been built sometimes also, to become a receptacle of the Pitagat, or collection of the holy scriptures. One of the finest temples of Ceylon was devoted to that purpose. There was also one in the ancient city of Ava, but I am not aware that there is any of this kind at Amarapúra.

‘Finally, dzedis have been erected for the sole purpose of harbouring statues of Gaudana; but there is every reason to believe that this practice has gained ground in subsequent ages. When a fervent Buddhist, impelled by the desire of satisfying the cravings of his piety and devo-

* *Life or Legend of the Buddha of the Burmese*, p. 141.

tion, wished to build a religious monument and could not procure relics, he then remained contented with supplying the deficiency with images of Buddha, representing that eminent personage in some attitudes of body that were to remind Buddhists of some of the most striking actions of his life. In many instances, dzedis have been built up, not even for the sake of sheltering statues, but for the pious purpose of reminding the people of the holy relics of Buddha and, as they used to say, for kindling in the soul a tender feeling of affectionate reverence for the person of Buddha and his religion. If what is put forward as a plea for building pagodas be founded on conviction and truth, we must conclude that the inhabitants of the valley of the Irrawady are most devotedly religious, as the mania for building dzedis has been, and even now is, carried to such a pitch, as to render fabulously exaggerated the number of religious buildings to be seen on an extent of above 700 miles as far as Bhamo.*

Fourthly.—As to the next division of my subject—Buddhist figures—I shall say little here, reserving detailed descriptions of particular figures for future chapters. The principal figure of course is that of Buddha, who is found in every possible position, and in every possible variation of costume. The favourite type of the image of Buddha in Bihâr, is one containing a large figure in the centre, seated on a lotus petal throne, surrounded by smaller images, and illustrating some famous episode in the Sage's life; *e. g.*, Buddha with one hand uplifted, denoting his character as a teacher; a similar figure in a sitting attitude, with one hand holding the alms bowl, the other hanging down over the knee, showing him to be plunged in meditation, and so forth. The hair of Buddha, when not covered by the jewelled crown, is generally in small tufts. This is not explained by Schlagintweit, but I take it to typify the following* incident in his life, which is supposed to have taken place at the time of his embracing the pursuit of a religious life. "He reflected that his long hair did not become the character of a poor ascetic, and he determined to have it cut off: but as no one was worthy to touch his head, he cut it off with his own sword, praying "May my hair, thus cut, be neat and even!" And by the force of his prayer, the hair parted evenly, leaving each hair about an inch and a half in length, and they curled in right-handed spirals, and never grew more to the last day of his life." To the left of the figure of Buddha is generally seen a delicately carved female figure, holding with one hand the branch of a luxuriant tree. This refers to the birth of Buddha in the Simwaliwana forest, which is very poetically translated in Mr. Alabaster's 'Wheel of the Law' (p. 101).

'When the queen Maia entered this forest, the trees, the inanimate trees, bowed down their heads before her, as if they would say, 'Enjoy yourself, O queen, among us, ere you proceed on your journey.' And the queen,

* Alabaster's *Life of Buddha*, p. 150.

looking on the great trees and the forest, lovely as the gardens of the angels, ordered her litter to be stayed, that she might descend and walk. Then standing under one of the majestic trees, she desired to pluck a sprig from the branches, and the branches bent themselves down, that she might reach the sprig that she desired; and at that moment, while she yet held the branch, her labour came upon her. Her attendants held curtains around her, the angels brought her garments of the most exquisite softness; and standing there, holding the branch, with her face turned to the East, she brought forth her son, without pain or any of the circumstances which attend that event with women in general.'

To speak further of the symbols of Buddhism is quite beyond the province I have chosen. Every information on this subject, can be gleaned with ease from the learned writings of Schlagintweit and Alabaster, and I shall have occasion to say more about them when I come to speak of particular figures.

Fifthly.—Inscriptions. These vary from B. C. 200 to A. D. 1000, and are in most cases confined to the Buddhist creed. I have, however, discovered several dated inscriptions, which I shall give in full when I come to speak of the monastic buildings to which they belong.

I now proceed without any further introduction to give an account of the Buddhist remains in Bihâr.

IV. Kusa'ga'rapura and Ra'jagriha.

Neither Hwen Thsang nor Chi-Fah-Hiyan visited at once the capital of the Magadha kingdom. Both of them arrived there after spending a considerable time in the various monasteries of the surrounding territory. A description of the remains of those institutions will follow in future chapters; but I have thought it best for many reasons to commence my narrative with an account of the great metropolis itself.

The ruins of Ra'jagriha may conveniently be classified under two heads: 1st, the remains of the more ancient city—Kusagârapûra—situated within the Valley of the Five Hills; 2nd, those of the more modern city Ra'jagriha, which are found in the plain to the north of the mountains. The one I designate as the city of Bimbisâra, the other as that of Ajatasatru. These towns were visited by both the Buddhist pilgrims, by Fah Hiyan about the year 415, A. D., and by Hwen Thsang in March, 637, A. D. Hwen Thsang and Fah-Hiyan have bequeathed to posterity very detailed accounts of the monuments and antiquities both of the towns themselves, and the sacred range of hills which surrounded them. Their respective narratives are to be found in the "*Mémoires sur les Contrées Occidentales*," Vol. III, pp. 15—41, in the "*Histoire de la Vie de Hwen Thsang*," pp. 153—161; in Mr. Laidley's

translation of M. Remusat's *Chi-Fah-Hiyan*, pp. 264-279, and the Rev. S. Beal's original translation of the same writer, pp. 111-119.

According to the first named work, Hwen Thsang travelled to Rājagriha from Nālandā, but the second states that he arrived first at the ancient town of Bimbisāra viā Bodhi Gayā and Kukkutāpada; but both translations of the earlier pilgrim agree in taking him to the capital by the former route.

Nālandā was the largest and most important Buddhist monastery in India, and is identical with the modern village of Bargāon situated about six or seven miles to the north or north-west of Rājagriha. It is now the scene of a mass of the most interesting ruins, which have been fully described by me in a separate pamphlet.* Since the time that account was printed, fresh excavations have been made, and I trust one day to present to the public a still more complete account of these important Buddhistic remains.

I shall now proceed to follow in the first place the footsteps of Fah-Hiyan.

He writes "Going west from Nālandā one yojana, we arrive at the new Rājgir." This undoubtedly corresponds with the large circuit of fortifications (still bearing the same name) at the foot of the Baibhār and Vipulā hills, situated six miles or thereabouts to the *south* of the Bargāon ruins. I, therefore, think the direction given by the translators must be a mistake.

Fah-Hiyan continues: "This was the town king Ajāsat built. There are two Sanghāramas in it. Leaving the town by the west gate and proceeding 300 paces, (we arrive at) the tower which king Ajāsat raised over the share of Buddha's relics which he obtained. Its height is very imposing."

The walls of the town and its gates are distinctly traceable at the distance of about half a mile from the foot of the mountain and directly facing the northern entrance of the Valley of the Five Hills. Its form is somewhat difficult to describe, and authors have varied in their attempts to do so, but after careful inspection from all points of view, and, what is still better, after studying its form from two of the hills above, I am of opinion it cannot be correctly called a pentagon, but is rather a quadrilateral, having, as measured from the top of the ramparts, three equal sides, *viz.*, the north, west, and south, each measuring 1,900 feet, and one unequal *viz.*, the east, measuring 1,200 feet. The wall appears to have had a uniform thickness of about 14 feet, and is composed of masses of stone about four feet square, the faces of which are made uniform and placed one upon the other in close contiguity, without any mortar or cement whatever. Starting from the north-east corner, where a stone bastion still exists in tolerable entirety, the wall remains unbroken for 200 feet, at the end of which distance a second bastion appears to have existed and similar traces are seen at the 300th foot. The remains of the wall now almost entirely disappear, but at the distance of

* *Ruins of the Nālandā Monastery*, by A. M. Broadley. Calcutta, 1872.

1100 feet from the north-east corner there is a portion of an entire wall measuring 20 feet by 14. Further on, the wall appears clearly to have been removed and hardly a trace of it remains till towards the north-west corner, where its elevation considerably increases, and there are enormous masses of brick, which lead me to the conclusion that a tower must have once existed here. At this place the bricks are very small and of remarkable solidity. At a distance of 110 feet from the corner there are clear marks of a bastion, and the same feature is observable at similar distances up to the great west door, some 500 or 600 feet from the north-west corner of the fort. The rampart throughout this distance presents an average elevation of 25 or 30 feet above the plain beneath. Just before the west door, a fine piece of wall still remains intact measuring 26 feet by 14. Passing out by the west gate and going 800 feet in a direct line to the south-west, and crossing about midway the Sarasvatī rivulet, one arrives at a circular mound having an elevation of some 30 feet and a diameter of 180. The centre is considerably depressed, and seems to consist simply of masses of bricks similar to those on the ramparts and inside the fort. From the west side of the ruins a sort of terrace leads to a semi-circular heap of somewhat less elevation than the first. In the centre of this I discovered three large statues of Buddha, all headless but otherwise little mutilated; they are all seated on lotus-petal thrones, supported by bases ornamented by different devices. In one, several figures are seen in the act of making an offering; the centre of the second is occupied by the "Wheel of the Law," with a deer on either side, and the third bears the representations of two lions-couchant. These mounds are undoubtedly the ruins of the great tower mentioned in the text. I have made at the present time two incisions in the side of the tops, and have recovered from them some Buddhist idols of remarkable beauty, as well as a tablet covered with the representations of the nine planets.

From the west door the ramparts still increase in height, but the wall is hidden by masses of brick. Not far from the end of the western side, there is another break in the wall, exactly opposite which is a small temple containing a Buddhist idol, now worshipped by the Hindús as the image of Beni Mádhava. At each side of the Sarasvatī stream is a *pacca* ghát, and the ceremonies of "Goudán" and "Pindádán" are constantly performed here. At a short distance from this opening, the south rampart commences, and has an elevation nearly equal to that on the west. The wall is not straight, but inclines towards the north-east. At about the 500th foot from the south-west corner, there are unmistakable traces of an enormous brick tower, and 400 feet farther on there is a long piece of wall still intact, and terminating in the southern gate. From this point to the south-east angle the wall is clearly visible. It has an elevation of some 30 or 40 feet above the valley, and there appear to have been bastions at distances varying

from 100 to 110 feet. Opposite the south-east corner and at a distance of 50 or 60 paces, there are distinct marks of a ruined tower similar to the one near the western gate already described. The wall towards the east has a total length of nearly 1,200 feet, and the ruins have a very inconsiderable elevation. Bastions are clearly visible at the following distances from the south-east angle, *viz.*, 200, 320, 420, 520, 620, 720, 820, 920, 1020, 1120, and 1200 feet. Montgomery Martin considers the heaps of brick to be the remains of a second set of fortifications built by Sher Sháh, but I am rather inclined to regard them as the ruins of the ancient towers, the two monasteries, and the royal palace, which we know to have existed in the town and parts of which as well as other buildings were doubtless built on the city walls. General Cunningham gives a much larger area to the ruined city, but it must be remembered that he made his measurements outside the ditch, very faint traces of which are visible on two sides of the wall. I have endeavoured to trace carefully the rampart, and in many places removed the heaps of brick which covered it. In most cases I succeeded in uncovering the original wall, which uniformly presents a thickness of 14 feet. As regards the outer walls which are said to have existed, if the heaps of stone which are found at different distances from the fort are traces of them, they are so imperfect that any attempt to follow them would be simply futile.

It now remains for us to see what Hwen Thsang said of the "new town." The description of the "old town" comes first in his account. After completing his account of the deserted city, he says: * "En sortant par la porte septentrionale de la ville entourée de montagnes—Kouçágárapura—il fit un li, et arriva au Bois de Bambous donné par Karandavénouvana. Il y a maintenant un Vihara dont les fondements sont en pierre et le bâtiment en briques. La porte regard l'orient." This spot can be very correctly identified with the mass of débris found in the ravine, between the northern gate of the old town, and the southern entrance to the new. A large platform of stone-work still exists, and this is covered by a small pillared cell. It is, strange to say, still popularly called the Madrasah, or College,—vihara. He then distinctly mentions the stúpas referred to above. He writes, "A l'est du bois des Bambous de Karandavénouvana il y a un stoûpa qui a été bâti par le roi Ajátuçatrou. Après le Nirvana du Tathágata les rois partagèrent les reliques. Le roi s'en retourna avec la portion qu'il avait obtenue, bâtit par respect un stoûpa et lui offrit ses hommages. Le roi Açoka ayant conçu une foi sincère, ouvrit le monument, prit les reliques, et bâtit à son tour un autre stoûpa. A côté du stoûpa du roi Ajatuçatrou il y en a un autre qui renferme les reliques de la moitié du corps du vénérable Ananda." This description agrees wonderfully with that given by me above, of the two tumuli to the west of the new-town, of the identity of which there

* Mémoires, Tom. III., p. 29.

cannot be the slightest doubt. "Au nord du Vihâra du Bois des Bambous," continues Hwen Thsang, "il fit environ deux cents pas, et arriva à l'étang de Karaṇḍahrada." The remains of the tank can still be seen facing the southern wall of the new town, and a figure I found there bore the words "A religious gift to the Karaṇḍahrada tank." To the north of the tank, at a distance of two or three feet, he saw a stûpa about 60 feet in height, which had been built by Aśoka. This must be identical with one of the jungle covered mounds just under the city ramparts; but every trace of the monolith which stood beside it, has disappeared.

He now arrives in new Rājgir, and it is clear that the two centuries which had passed since Fah Hīyan's visit, had reduced the town to a ruin, very little different from that which it has been my task to describe, a fact which makes the contemplation of these venerable walls doubly interesting, both to the historian and to the archaeologist. He writes,* "L'enceinte extérieure était déjà détruite, et l'on n'apercevait pas même les restes des murs" [yet General Cumingham endeavours to survey them!]. "Quoique les murs intérieurs fussent en ruines, leur base avait encore une certaine élévation, et embrassait dans ses contours une vingtaine de li.....A l'angle sud-ouest de la ville royale il y a deux petits Sīnghārāmas où s'arrêtent les religieux étrangers qui voyagent." These monasteries are now represented by the enormous pile of bricks and rubbish which is to be found at the south-west corner of the town, and which I have already alluded to.

We can now return to Fah Hīyan, and follow him into the Valley of the Five Hills.

'Leaving the south side of the city and proceeding southwards four *li*, we enter a valley between five hills. These hills encircle it completely like the walls of a town. This is the site of the old city of king Bimbisāra.' The valley is clearly identical with the narrow tract of country surrounded by the five mountains of Rājgir, a little less than a mile due south of the fortifications previously described. This spot is of the greatest archaeological interest. Here once stood, according to tradition, the impregnable fortress of Jarāsandha, outside the walls of which was fought one of the most famous battles of the Mahābhārata; centuries later, the valley was the scene of many of the episodes in the life of Tathāgata; and lastly—during the palmiest days of Muhammadan rule in Bihâr—its solitudes became the abiding place of Makhdûm Sharaf-uddîn, one of the greatest saints amongst the Faithful in Hindûstân.

These five hills are by no means solitary; they form a portion of a rocky mountain chain stretching nearly thirty miles from the neighbourhood of Gayâ, north-west as far as Giryak in Bihâr. Their sides are rugged and precipitous, and are mostly covered with an impenetrable jungle, broken only

* Mémoires, Tom. III, p. 38.

by irregular pathways overgrown with brushwood, which are yearly trodden by hundreds of Jain pilgrims from Murshidābād, Banāras, and even Bombay, who throng to Rajgir during the cold and dry seasons to do homage to the sacred *charanas*, or 'foot prints,' of their saints, enshrined in the temples which crown the mountain tops.

The north side of the valley is bounded by Mount Baibhār—a rocky hill running three or four miles north-west, and terminating at its eastern side in the hot wells of Rajgir. Here the valley is entered by a narrow ravine through the midst of which the Sarasvatī rivulet forces its way into the low country to the north of the hills. On the eastern side of the stream rises the lofty ascent of Mount Vipula, a branch of which runs as far as Giryak, a distance of six miles. Hardly a quarter of a mile from the western side of the hill, it is joined at right angles by a third mountain running from the north, called Ratnagir. This hill is of inconsiderable length and terminates in a narrow ravine branching away to the east. On the opposite side of this ravine rises Mount Udayagir, a less important hill, running due south and terminating in the ancient wall and fort of Bangangā, the southern gate of the ancient capital of Magadha. To the west of the torrent is the fifth and largest hill, Mount Sonār. It first takes a course to the west, then turns northwards, and finally, exactly opposite the narrow valley between Mounts Ratnagir and Udayagir, stretches away to the west, and forms the southern boundary of this natural fortress, being only separated at its western extremity by a narrow ravine from an offshoot of Mount Baibhār, commonly called the 'Chhātā.' These five hills are called in the Mahābhārata*—Vaiḥāra, Varāha, Vṛishābha, Rishigiri, and Chaityaka; and in the Pali annals of Ceylon—Gijjhakuta, Isigili, Webhāro,† Wepulo, and Pandawo.‡

Speaking of the valley, Fah-Hiyan§ goes on to say: 'From east to west it is about five or six *li*, from north to south seven or eight *li*.' It is evident that Fah-Hiyan excluded from his computation the eastern and western bifurecations of the valley, and even then its dimensions are slightly understated.

The description of the valley of the five hills given by Hwen Thsang|| differs very considerably from that of his forerunner. He tells us that the city was situated just in the centre of the kingdom of Magadha, and was in

* Mahābhārata, II. 20, v. 799, 800.

† Lassen suspects the reading *Vaiḥāra* by Turnour to be incorrect, and proposes to read *Vaiḥāra* in accordance with the Mahābhārata. 'It is surprising,' he adds, 'that the first and last names are Buddhistic, and we may, therefore, suspect they were given to these mountains only after the time of Buddha. *Alterth.*, vol. II., p. 79.

‡ Turnour, in *Jour. As. Soc. Beng.*, vol. VI., p. 996.

§ Beal's *Fah Hian*, Chapter xxviii., p. 112.

|| *Mémoires*, Tom. III., pp. 15-16.

ancient days the metropolis of the country. Its name, he says, was derived from a flowering shrub, which grew there in abundance. He continues: "De hautes montagnes l'entourent de quatre côtés et forment ses murs extérieurs. A l'ouest on y pénètre par un sentier qui existe entre deux montagnes; au nord on a ouvert une entrée à travers la montagne. Cette ville est allongée de l'est à l'ouest et resserrée du sud au nord. Sa circonférence est de cent-cinquante li (30 miles). Les restes des fondements de la ville intérieure ont environ trente li de tour."

This area would make the outer walls of the old town to extend from Gir-yak to the Chibâta hill, a distance of ten or eleven miles; and from the foot of the Udayagir and Sonârgir hills to the opposite side of the valley, a distance of two or three miles. From a careful examination of every part of the valley, I have little doubt that the whole of it, or very nearly so, was surrounded by the fortification of the ancient capital, but the inner town, (the ramparts alone of which I have endeavoured to trace) certainly did not extend further than the Nekpâi embankment on the one side, to the Jarâsandha band on the other. I will now proceed to describe as shortly as possible the present appearance of the valley of the "sweet-scented shrub."

The north side of the valley is watered by two streams, both bearing the name of Sarasvatî, which rise, the one at the foot of Ratnagir, and the other at the western extremity of Mount Sonâr. These rivulets join a short distance to the south of the ravine which forms the entrance to the valley. The sides of the hills and the plain at their feet are covered mostly by a tangled mass of flowering shrubs and wild *tulsî* grass, broken only by some protruding escarpment or the white cupola of a Jain pagoda in the one case, and in the other, by heaps of bricks—the ruins of temples and topes, and the huge piles of stones which still mark the ancient ramparts of the city. The form of the walls can, with a little difficulty, be traced with tolerable accuracy. Strictly speaking, these ramparts formed an irregular pentagon about four miles in circumference. One side faced the west, and was about a mile in length, extending along the western branch of the Sarasvatî; a second ran south to the foot of the Sonargir; a third east to the entrance of the ravine between Udayagir and Ratnagir; a fourth north, towards the junction of the streams; and the fifth and smallest joins the first and fourth. A road seems to have run through the city from the new town to Bangangâ. The northern side of the city, facing the ravine, appears to have been protected by a lofty tower composed of stones of irregular shape, placed one upon the other (not squared and arranged in courses as in the walls of new Râjgir). Near the stream appears to have been another tower of great height and of similar appearance, and close under it an outer gate towards the north. From this place an enormous wall, 18 or 20 feet thick

and 15 or 16 feet high, stretched itself to the summit of Mount Vipula, and protected the city from attacks on the mountain side. There were doubtless similar fortifications on the side of Mount Balbhâr, but their traces are very faint, whereas those on the western slope of Mount Vipula are remarkably perfect and distinct. Over the whole surface of the interior of the city is spread a mass of débris covered by brushwood and shrubs, and here and there are piles of bricks and stones, denoting the site of some house or temple. Near the south-west corner of the city is a lofty tumulus, somewhat higher than the ruins of the eastern entrance. This is covered by a small Jaina cupola of brick and plaster. The sides of the tumulus are strewn with bricks and fragments of granite pillars. I also discovered some pieces of cornice covered with representations of Buddhas and Nāgās. I made an excavation on the north side of the tumulus, and uncovered a considerable portion of the northern side of a Buddhist building, of which the entrance seems to have faced the north—a feature I have not before met with in any similar ruin,—for the numerous temples which I have seen at Rājgir and other places are, without exception, approached from the east. A staircase of brick, with walls on either side, led to the inner hall. The walls appear to have been strengthened, and the roof at the same time provided with supports, by the erection of gray stone pillars, about four feet apart, with plain square bases and capitals. This passage led to a room about 12 feet square, containing twelve pillars similar to those in the staircase—ten of which are imbedded in the brickwork and two support the roof in the centre of the chamber. The centre hall is directly underneath the Jaina temple, and it consequently has been impossible to uncover it. I think the precise nature of the original building is doubtful; the position of the entrance leads me to the conclusion that it was most likely a house or tower, not a religious edifice. The doorway seems to have been surmounted by a long basalt slab containing figures twelve inches high. I brought away two pieces of this to Bihâr. Several other figures were found in this place years ago, when it was pierced by an avaricious road-contractor in the hope of finding treasure. If he ever learned the Jaina traditions connected with the place, his hopes must have been high, for they make out the tumulus to be the ruin of the house of Danāji and Sathadrāji, two sēṭhis, or bankers, in whose honour, they say, a small temple still exists on the eastern slope of Mount Balbhâr. If the priests made their story known to this enterprising seion of the Department of Public Works, they cannot solely blame him for the disaster which followed on his researches, namely, the collapse of the stucco pagoda and its sacred '*charana*,' towards the end of the succeeding rains.

About a mile to the south-east of the mound is a long piece of rampart known as 'Barghaut.' In the centre of this was the southern gate of Kusāgarapura, flanked by two towers. The view from the top of the ruin

is very striking, for you see at once both entrances of the valley and all the five hills. A little to the west of this, at the foot of Sonârgir, is a ridge of rock called the wrestling ground of Bhim, and various indentations in its surface are pointed out as the marks of the feet of the combatants. Beneath this, to the west of the city walls, and between Mounts Baibhâr and Sonâr is Raṅghûm, the traditionary scene of the battle mentioned in the Mahabharata.

A rugged path leads from this place to the southern outlet of the valley at Baugangâ. Certain marks on the stones are considered by Captain Kittoe to be inscriptions, but if this be the case, the letters are far too imperfect to admit of being deciphered. The valley terminates in a rocky ravine of the most inconsiderable width, having Sonârgir to the west and Udayagir to the east. The Baugangâ torrent, which rises at the foot of the former, rushes over the slippery rocks into the southern plain of Hisna-Nowâda. The pass is literally only a few feet wide, and its entrance was jealously guarded by fortifications of enormous strength, which will be fully described when I come to speak of the antiquities of the hills.

The first mountain I ascended was Baibhar to the north-east of the northern entrance of the valley. At the foot of the hill runs the Sarasvatî, from the banks of which a large stone staircase leads to the sacred wells and temples, which, though still venerated by the Hindûs of Bihar, yield but a scanty subsistence to the numerous Brâhmins who attend them. The wells are vaults of stone, about 10 feet square and 12 deep, approached by steps; and the temples are quite modern, and of the poorest proportions and workmanship. Most of them contain fragments of Buddhist idols, mouldings, cornices, &c., and here and there I noticed a *chaitya*, now doing duty as a *linga*. All of these carvings, however, are very inferior to those found by me in the mounds of Bargâon, Rohoî, and Kalyânpûr. The wells at the foot of Baibhâr are seven in number, and are all clustered round the great Brâhmakund, which is larger, deeper and more highly esteemed than the rest. The one nearest the ascent of the mountain is the *Gangâ-Samudra-kund*. The water is warm, and enters the vault by means of two stone shoots, the ends of which are carved to represent the heads of tigers or lions. They remind one strangely of the *gurgoyles* of early English Architecture. These pipes were clearly mentioned by Hwen Thsang in the narrative of his travels. He says “à toutes les ouvertures par où s'échappe l'eau des sources, on a posé des pierres sculptées. Tantôt on a figuré des têtes de lions, etc.”* Below this are the *Anand Rikhi*, *Mârkanda*, and *Byâs kund* springs. Next to these comes the *Sât dwâra*—a vault some 60 feet long by 10 feet wide, which receives seven distinct streams on the west side, from the mountain above. Several of these springs enter the reservoir through “tuyaux

* Mémoires, Tom. II., p. 23.

suspendus," and at the south end is a small subterranean temple containing rude and, apparently, very modern images of the 'Seven Rishis.' At the east side of the *Sât darâra* is the celebrated *Brâhma kund*. The temperature of the water is about 105 deg. Fahr. It is in this that several hundred thousand persons bathe at the recurrence of every thirty-first lunation. Below this is the *Kâsî tîrth*, which is in reality a mere outlet for the waters of the *Brâhma kund*, which escape through it, still warm and steaming, into the *Sarasvatî* below. Climbing a distance of 276 feet to the south-west of the *Mârkaṇḍa kund*, one arrives at an enormous stone platform projecting from the face of the hill. It is composed of huge masses of unhewn stone piled one upon the other, and is about 50 feet square and 28 high. At its base there are a number of small grottos six or eight feet square, of which two are in the eastern and five on the northern side. These were evidently caves or chambers of meditation, and are up to this day inhabited at times by 'nâgas' or 'sadhus', a *jogî* whose body is perpetually smeared with ashes, and whose wardrobe seems to consist merely of a very small waistcloth, a tattered umbrella, and a necklace of enormous beads. These beggars flock in thousands from all parts of India to Râjgir during the great fair, and are fed by the *Muhants*, or abbots, of the monasteries of Râjgir and Râjavâlî, who alone exercise the jealously-guarded right of raising their crimson standards during the month in which the gathering takes place.

To return to the stone platform. It is generally known as the *Jarâ-sandha-kâ-baithak*, and on its summit are three Muhammadan tombs, one of which is said to be that of Râja Kâmdâr Khân Maip, whose life and adventures during the end of the 17th and beginning of the 18th centuries form the subject of many a rude ballad and story in Bihâr, and which occupy almost the same place in the heart of the people as the tales of Robin Hood and his followers do at home. Behind this platform is a large cave. I searched for it in vain in September, but owing to the dense brushwood and jungle which covered it during the rainy season, I failed to find it. General Cunningham, however, was fortunate enough to light on it during his recent visit, and I have since completely cleared and excavated it. It is of oval shape, and has an opening to the east. Its floor was considerably below the surface, and was reached by a flight of eight or nine brick steps several of which I uncovered almost entire. The chamber measured 36 feet from east to west, and 26 from north to south. The roof (most of which has fallen in) was 18 or 20 feet high. The whole was lined, as it were, by a brick wall about 2 feet thick. In the midst of the rubbish which filled up the bottom of the cave I found a very perfect standing figure of Buddha in black basalt. I can, I think, satisfactorily identify this cave and platform with the account of Fah-Hiyan and also with that of Hwen Tshang. Fah-Hiyan says—"skirting the southern hill" (and it is to be noted that this

part of Baibhār runs almost due south) “and proceeding westward 300 paces, there is a stone cell, called the *Pipal Cave*, where Buddha was accustomed to sit in deep meditation after his mid-day meal.”*

This corresponds exactly with the position of the cave in question, and this view is supported strongly by the succeeding sentence,—“going still in a westerly direction five or six *li*, there is a stone cave situate in the northern shade of the mountain, and called Che-ti.” This description applies with singular accuracy to the Sonbhāndār Cave in the northern shade of Mount Baibhār, and almost exactly a mile from the *baiṭhak* of Jarāsandha. Hwen Tshang’s account is still more striking,—“À l’ouest des sources thermales, on voit la maison en pierre du *Pi-po-lo* (Pippala). Jadis, l’honorable du siècle, y faisait son séjour habituel. La caverne profonde qui s’ouvre derrière ses murs était le palais des ‘*O-sou-lo*—Asouras’† [of Jarāsandha ?].

Pushing 800 feet further up the mountain side, I found another platform, or *baiṭhak*, almost identical in size and shape with that of Jarāsandha. The Rājwars call it *Sitāmuri*, but I could discover no special legend concerning it. Leaving it and climbing up a steep ascent to the west for a distance of about 1300 feet, one comes, quite suddenly, on a small Jaina temple built some few years ago by one Hukumat Rai. Between the last *baiṭhak* and this temple there are marks of an enormous wall, 14 or 15 feet thick, and this forms the pathway which leads up the mountain side. The Rājwars, the sole inhabitants of the wild of Rājgir, called it Jarāsandha’s staircase, and tell you that he built it in a single day to assemble his troops on the mountain tops on the approach of his enemies from the west. The temple contains (besides the usual *charana*, or footprint) two very fine and perfect figures of Buddha. The first is three feet high. Buddha is represented sitting on the lotus throne (*padmasana*) in the attitude of meditation. Beneath this, the *Sīṅhāsana* is divided into three compartments—the two outer containing lions, and the middle one the ‘Wheel of the Law,’ (very elaborately carved) supported by two shells. The second figure is a smaller one and is surmounted by a canopy.

Eight hundred feet to the west of this temple is a similar building containing nothing of interest. Twelve or fourteen paces to the south of it, I found the ruins of a very small Buddhist temple covered with the densest jungle. It appears to have contained twelve gray stone columns about six feet high. The entrance was to the east, and in digging out the centre I found a very curious image of Buddha—very roughly carved. The main figure was surrounded by smaller ones, each depicting some chief episode in his life. Piercing the jungle 400 feet to the south-west of this ruin, I found the remains of a very large temple almost perfect. The cupola had fallen

* Beal’s *Fah-Hian*, Ch. xxx., p. 117.

† *Mémoires*, Tom. II., p. 24.

down on all sides, forming a mound about 500 feet in circumference and 16 or 17 feet high. The entrance to the east is about 6 feet wide, and leads to a passage some 14 or 15 feet long, the roof of which was formerly supported by gray stone pillars about 6 feet high. This leads to a square chamber or hall some 23 or 24 feet square. Its roof is supported by twelve columns in the chamber, and eighteen more let into the brick work. These columns are each 7 feet high, with square bases and capitals and octagon shafts. They rested on a detached square plinth a foot high. A sur-capital, separate from the shaft, and cruciform in plan, supported the roof which was composed of enormous granite slabs laid transversely. From this room a massive doorway and a flight of three steps leads to the inner chamber—somewhat less in size than the other, but considerably loftier—the total height of its roof being 13 feet. The columns are of the same description as those in the outer hall, but more lofty. The detached capital are each a foot high, the base is 2, the octagonal shaft 6, and the second capital 3 feet in height. The lintel of the doorway is 2 feet broad and is carved with a rude moulding. In the centre of the lintel, is a figure of Buddha. I found no images in the temple, but it is by far the most perfect building of the kind I have yet seen. Its situation is magnificent, commanding at once a view of the highly cultivated plain of Bihâr, the “solitary rock,” the topes and temples of Nālandā, the walls of new Rājgir, the five hills, and the valley of Kusāgārapura.

A short distance to the south of this is a very small Jaina temple dedicated to Dharmanātha and Shantinātha, the 15th and 16th *Tīrthankaras*. It contains two images and a *charana*, with an inscription about 200 years old. The *pūjāri* has corrupted the names to ‘Dhīnaji’ and ‘Sathadrajī,’ and describes them as two wealthy bankers who lived in the house at the Nirmul kund, *i. e.* the mound in the south-west corner of the ancient city.

Continuing to ascend the eastern slope of the hill for nearly a quarter of a mile, we arrive at a Jaina temple of very considerable dimensions. It is square in form, and is surmounted by four handsome minarets and a cupola. It was built by one Pratāp Singh of Murshidabad, and a passage (*pradakshinā*) encircles the central shrine. There is also a small octagon chapel, containing *charanas* at each corner. The doorway has been taken from a Buddhist temple, and is covered with exquisite carving. The temple is 51 feet by 58. Some two hundred yards to the west of this is the largest temple of the group, built by one Mānikchand Seth in the middle of the last century. Mānikchand was a well known character in Calcutta, and his dedication is recorded on the *charana*. The building consists almost entirely of Buddhist materials. It has a vestibule, the roof of which is supported by pillars somewhat smaller in size, though of the same shape as those in the temple I have described above in detail. At the north side are

the remains of a Buddhist temple, probably larger than any other on the hill. Its pillars, &c., lie about in all directions, and it seems to have served as the quarry from which Mánikchand built his. A quarter of a mile further on, and near the crest of the hill, I had the good fortune to find another Buddhist temple in the jungle, about five paces to the north of the path. Its details resemble very much those of the great temple below, but a figure of Buddha still occupies the centre, and the foundations of a court-yard can still be traced.

Proceeding still westwards for nearly half a mile, the highest peak of the hill is gained, where is an enormous *tope*, covered with brushwood, and crowned with a Jaina temple. The view from the top is magnificent, especially towards the valley, the whole of which Baibhār commands.

Descending the almost precipitous southern face of the mountain, I arrived at the Sonbhandār cave, which is situated in the "northern shade" of the hill, as nearly as possible a mile to the south-west of the hot wells. I have little difficulty in identifying this with the Sattapānni cave spoken of both by Fah-Hian and Hwen Tshang. In doing so it must be borne in mind that the Baibhār hill runs due *south-west*—not 'west,' and that the Sonbhandār is near the northern end of the mountain. Fah-Hian says, that "going in a *westerly* direction five or six *lis*" (i. e., from just above the hot-springs) "there is a *stone cave* situate in the northern shade of the mountain, and called *Che-ti*. This is the place where 500 Rahats assembled after the *Nirvāna* of Buddha to arrange the collection of sacred books." This coincides exactly with the position of the Sonbhandār cave, and it also agrees with Hwen Tshang, who places it five or six *lis* to the south-west of the Karaṇḍavēṇuvana clump of bamboos, which both authors represent as being close to the hot-springs. The words of Hwen Tshang are as follows—"au sud-ouest du Bois des Bambous, il fit cinq à six *liv*. Au nord d'une montagne située au midi," (this I have previously explained) "au milieu d'un vaste bois de bambous il y a une grande maison en pierre. Ce fut là qu'après le *Nirvāna* de *Jaulāi*, le venerable Mahā Kashyapa et neuf cent quatre-vingt-dix-neuf grands Arhats formèrent la collection des trois Recueils sacrés. En face de cette maison, on voit encore d'anciens fondements. Le roi Ajātasatru avait fait construire cet édifice, &c."

The cave appears to have been formerly approached from the south by a staircase or sloping path, which has now almost entirely disappeared, and to have been faced by a broad platform nearly 100 feet square. This space was occupied by an extensive hall, the rafters supporting the roof of which rested in cavities in the rock that still exist. Piles of bricks and stones lie in all directions. The face of the cave has a naked surface of rock, as smooth and even as if built of brick. It is 44 feet in length and 16 feet high, and is bounded on the west by a protruding rock and on the east by

a narrow staircase of twenty steps cut in the cliff. The rock is pierced in the centre by a door 6 feet 4 inches high and about $3\frac{1}{2}$ feet wide. The thickness of the wall of rock is exactly 3 feet. At 11 feet 10 inches west from the door, and in a line with it is an opening in the cliff 3 feet high by 3 feet wide, which serves to light the vault. The interior is a vaulted chamber 33 feet long by 17 feet wide, with a semicircular roof 16 feet high. The floor has been spoiled by the water which constantly falls from the roofs. Outside the door, and three feet to the west of it, is a headless figure of Buddha cut in the rock, and close to it an inscription, in the Asoka character, recording the visit of some holy man to the cave in search of quiet and solitude. There are also some Devanagari inscriptions inside.

Inside the cave is a 'chaitya,' so curious in shape and design, that I think it worth while to describe it somewhat fully.

Its form is square with a conical top surmounted by a large knob. Each side is 1 foot 10 inches broad, and its total height is 4 feet 9 inches. On each face there is a pillared canopy, underneath which is a standing figure of Buddha on a lotus-leaf pedestal, with a miniature attendant on either side, each holding a torch. The hair on the head is knotted, and the body is covered by a long cloak. The hands, instead of being raised in the usual attitude, are held down close by the side. The attendant figures are elaborately dressed and ornamented. At each corner of the arch of the canopy are figures holding scrolls. In the centre of the canopy, and immediately above the head of Buddha, rises a pipal tree surmounted by three umbrellas. The bases vary in design; on either side, beneath the pedestal, is depicted the Wheel of the Law, supported on one side by elephants, on another by caparisoned horses (with saddles of almost European shape), on the third by elephants kneeling, and on the fourth by bulls. The conical top of the *chaitya* resembles the cupola of a temple.

To return to Mount Vipula. This hill rises about three hundred yards to the east of the hot springs previously described. Its direction is due north-east. The northern face of the mountain is a rugged cliff, and its western slope is but a little less precipitous. At the foot of the hill there are six wells,—some of which contain hot, and some cold water. They resemble in shape those of Mount Baibhār, and are called respectively Náná-kunḍ, Sitá-kunḍ, Sóna-kunḍ, Ganesha-kunḍ, and Ráma-kunḍ. Nearly a quarter of a mile from these wells is a spring immediately under the northern face of the mountain. It is surrounded by a large enclosure, and its water is tepid. Passing through a courtyard, the visitor arrives at a small stone-cell in the rock, and immediately above this a flight of some eighty steps leads up the side of the hill to a platform paved with brick. This is the celebrated Makhdúm-kunḍ of the Muhammadans, and Sringgi-rikhi-kunḍ of the Hindús. This well is held in extraordinary veneration alike by Hindús

and Musalmâns, and is thronged by pilgrims all the year round. The spot is celebrated as the residence of Makhdûm Shâh Shaikh Sharaf-uddin Ahmad, a saint, not only revered by the Muhammadans of Bihâr, but by the followers of the Crescent all over India. The date of his sojourn at Râjgir was, as far as I can ascertain, about 715, A. H. The stone cell is said to be his "hujrah," i. e. the scene of a forty days' meditation and fast [Persian, *chillah*], and the platform above, the place of his morning and evening prayers. General Cunningham has been led into a strange error about this spot, and states it to have been *the dwelling of Saint Chillah, a converted Hindû*.* I shall give a complete history of the life and writings of Sharaf-uddin, in connection with the history of Muhammadan rule in Bihâr.

About two hundred feet from the foot of the hill, almost immediately above the northern gate of the ancient city, and nearly half a mile south-west of the Makhdûm-kund, are the remains of an enormous brick *stûpa* or "tope," now surmounted by a small temple of Mahâdeva. There is a similar ruin opposite this at the foot of Baibhâr, and the bed of the ravine is also strewn with débris. I clearly identify these ruins with the description of Hwen Thsang :† "En dehors de la porte septentrionale de la ville, il y a un *Stoûpa*..... au nord-est de l'endroit où fut dompté l'éléphant ivre il y a un *Stoûpa*." Leaving this place, and going some few hundred yards to the north-east, one arrives at two small Jaina pagodas, built on a peak of the hill. The first is dedicated to Hemantu Sâdhu, and the second to Mahavira, the 24th Tirthankara of the Jainas, who is said to have lived and died at Pawapûri, eight miles north-east of Râjgir. Continuing to ascend the western face of the hill, one looks down on a rocky defile which separates Mount Vipula from Ratnagir. There is little difficulty in identifying this from the remarks of Hwen Thsang as well as by those of Fah-Hian. The former says,‡ "Au nord de l'endroit où *Che-li-tsen* (Sâripouttra) avait obtenu le fruit du Saint (la dignité d'*Arhat*), tout près il y a une fosse large et profonde, à côté de laquelle on a élevé un *Stoûpa*..... Au nord-est de la fosse ardente, à l'angle de la ville entourée de montagnes il y a un *Stoûpa*. En cet endroit, le grand médecin *Chi-po-kia* (Djivika) bâtit en faveur du Boudha une salle pour l'explication de la loi." Fah-Hian writes :§ "To the north-east of the city in the middle of a crooked defile, Djivika erected a Vihâra .. *Its ruins still exist.*" I believe these places to be identical with the remains which I shall presently describe.

Nearly a quarter of a mile to the east of the pagoda of Mahâvira, one arrives at the summit of the hill, which is exactly above the centre of the "crooked defile." At this place is an enormous platform 130 feet long by

* Ancient Geography, p. 466.

† Mémoires, Tom. II., p. 16.

‡ Mémoires, Tom. II., pp. 18-19.

§ Beal's Translation, Chap. xxviii, p. 113.

30 wide, and about 6 feet above the surrounding rocks. It is constructed almost entirely of the materials of Buddhist buildings—I counted more than 30 pillars in the floor alone,—and this is easily accounted for by a large pile of ruins *at either end of the platform*. The mound to the east is nearly 30 feet high, and its surface is bestrewn with pillars and stone slabs. The ruins to the west are undoubtedly those of a temple or vihāra, and several gray stone columns are still erect. The modern Jaina temples on the platform deserve some notice, as all of them abound, more or less, in Buddhist ornamentation. The first of the series of four is only about 10 feet square, and is surmounted by a simple semi-circular cupola. It is dedicated to Chandraprabha, the 8th Tirthankara. The doorway is a fine specimen of Buddhist art. In the centre is a figure of Buddha under a canopy, and three parallel rows of exquisite geometrical pattern run round the sides. Above the door, a large ornamental slab, about five feet long and eight inches wide, is inserted in the masonry. It is divided into seven compartments, the first of which, on either side, contain figures of elephants, and the remainder—groups of figures in the attitude of the dance. This is almost identical with the ornamentation of a very beautiful doorway excavated by me from the mound at Dāpthū, and which is now in my collection of Buddhist sculptures. The next temple is divided into two chambers, and is of considerable size. It is dedicated to Mahāvīra, and both the inner and outer doors are very fine. The cornice of the latter is divided into nine compartments, in the first of which a man is represented in the act of dedicating a *chaitya*. The others are filled with the usual Buddhist devices. The top of the temple is pyramidal in shape. The next pagoda is faced by an open court, to the right and left of which are two slabs, the one covered with the representation of the ten Incarnations of Vishnu, and the other with those of the Nine Planets. The vacant space at the base of the carving is covered with a modern inscription in Nagari. The doorway is surmounted by a comparatively plain moulding. This temple is dedicated to Munisuvrata, the 20th Jaina Tirthankara, who is said to have been born in Rājgir. Inside the fourth temple are four *charanas*—two of them being of white marble. They are dedicated respectively to Mahāvīra [or Vardhamāna], Parshwanātha, Shanthanātha, and Kunthunātha—the 24th, 23rd, 16th, and 17th Tirthankaras respectively.

Leaving the temples and skirting the north side of the ravine, you cross a narrow ridge which brings you to Mount Ratnagīr. The summit is crowned by a temple decorated with some small black basalt columns, elaborately carved. From this a stone staircase or pathway leads down the western slope of the hill to the plain beneath.

Between Ratnagīr and Udayagīr lies a narrow valley covered with jungle, situated, as nearly as possible due north-east of the ancient city,

and stretching away as far as Giryak, a distance of six or seven miles. I shall now proceed to establish if possible an identification of this valley, connected with the writings of both the pilgrims. Hwen Thsang writes as follows :* “ *Au nord-est de la ville, il fit de quatorze à quinze li*” [2½ or 3 miles], “ *et arriva au mont Ki-li-tho-kin-teh'a (Gridhrakoûta Pârvata), qui touche au midi de la montagne du nord, et s'élève isolément à une hauteur prodigieuse.... Le roi P'in-pi-so-lo (Bimbisâra), voulant entendre la loi, leva un grand nombre d'hommes ; puis, pour traverser la vallée et franchir les ravins, depuis le pied de la montagne jusqu'au sommet, il fit assembler des pierres, et pratiqua des escaliers larges d'environ dix pas, et ayant une longueur de cinq à six li. Au milieu du chemin, il y a deux petits Stoûpas :* Le sommet de cette montagne est allongé de l'est à l'ouest, et resserré du sud au nord.” He then proceeds to speak of a vihâra to the west of the mountain, a colossal stone once trodden by the sacred feet of Sâkhyâ Muni, a stûpa to the south, and a second on the summit of the mountain. Fah-Hian's description† is far less minute, but he gives exactly the same distance [*viz.*, 15 *li*], and speaks of two caves on the hill—the colossal stone—the Vihâra, and the lofty peak.

On the 20th January, I made an attempt to explore the valley. Clearing the dense brushwood and jungle as I advanced, I skirted the foot of Ratnagir for about a mile from the old city, and then struck across into the centre of the valley, and pushed on two miles further to the east. I then saw that to the east of Ratnagir there is another mountain terminating in a lofty peak, which towers above the summit of the surrounding hills. This mountain is called Deoghât, and I unhesitatingly identify it with that mentioned in the text of Fah-Hian and Hwen Thsang. It adjoins the southern side of Vipula. In the middle of the valley, a stone terrace or staircase, about 20 feet broad, runs due north, towards the foot of the hill, for a distance of 900 feet. At this point it branches off to the east up the mountain side. At the distance of 300 feet from the plain, I found a small stûpa in the very centre of the staircase about 8 feet square, and in front of it three or four steps are still almost intact, each step being about 18 or 20 feet wide and a foot high. Near this place under a great heap of débris I found three images of Buddha almost perfect, but of the rudest workmanship. They are uniform in size, and bear inscriptions. From the stûpa the staircase continues to traverse the mountain-side for a distance of 800 feet. At this point I discovered a second stûpa and a large quantity of images, pillars, &c. Of these, the most remarkable are a figure of Buddha seated on a lion, a large Buddha seated on the usual lotus throne, and a standing figure of Buddha with a long inscription. All these idols have been remov-

* Mémoires, Tom. II., pp. 20-21.

† Beal's Fah-Hian, Ch. xxix., p. 114.

ed to Bihár, and merit a much more detailed description. The terrace now becomes more broken, but its traces are visible up to the peak. From its commencement in the valley up to the summit of the mountain it measures, as nearly as possible, one mile. The south and west side of the hill are covered with the débris of houses, &c., and the solitary peak which crowns the hill is surmounted by an enormous brick *stúpa*. Though there is no natural cave in the southern face of the hill, as might reasonably be expected, the other features it presents are so remarkable that its identification is beyond a doubt, and besides this everything tends to show that the caves and grottos of Rájgir were mostly artificial.

Parallel with Ratnagir and Devaghát [or Deoghát] runs Udayagir. Two ramparts or walls seem to have traversed the valley. The first to the west now called the Nekpai-band, and the second stretches from the foot of Deoghát, as before described, to the centre of the valley, and this seems to have been continued as far as the foot of the Udaya Hill. The slopes of this hill are more gradual than any of the others, and this accounts for the fortifications which surmount it. The steepest side of the mountain is towards the west, and it is through a narrow ravine at the foot of it, that the valley is entered from the south. The passage is very narrow, and in the centre runs the Bangangá rivulet, which rises from beneath Sonargir. The pass was strongly fortified, and the ramparts and bastions are still remarkably perfect, although they have been exposed to the devastations of the rain and sun for many centuries. Just within the valley are the ruins of the two towers, and at the entrance of the pass, where the width of the ravine is little more than twenty feet, two forts of considerable size—one on the slope of Udayagir, and the other facing it, at the foot of Sonargir. The former measures 111 feet from the north to south, and 40 from east to west. From this point a massive wall, 16 feet thick (and still having an elevation of some 10 or 12 feet), stretches in a direct line due east to the summit of the mountain. I measured it to a distance of 4,000 feet from the commencement, and it thus appears to continue its course for more than two miles on the crest of the hill, then to cross over towards the north, and finally to pass down the northern slope, and into the narrow valley between Udayagir and Ratnagir, just opposite the staircase of Binbisára, which leads to the summit of the Deoghat hill. The wall is composed of huge stones on either side, closely fitted together without cement, the centre being filled up by a mass of pebbles and rubbish. There are traces of Buddhist ruins on the top of the hill, and I found several images, and the remains of two large *stúpas*, and one temple similar to that on Baibhár. There is also a large enclosure containing five modern Jaina temples—the centre one square and the others triangular in shape. Each of the small ones contains a figure of Buddha bearing the creed, “ye dharma hetu, etc.” There are

large numbers of gray stone columns at the foot of the mounds above mentioned, and the spot has evidently been once the site of a Vihāra.

Although five hills are stated both in poetry and history to have surrounded the ancient capital of Magadha, this can hardly be considered literally correct, and to maintain the old description, several peaks must be considered as forming part of the same mountain. Thus the rocky cliffs of Chhāta, (or Chhakra,) must be deemed the eastern extremity of Baibhar, and the various parts of Sonārgir must be considered as portions of one great hill. Sonārgir, the most extensive, though the least lofty, of all the hills, begins at the south-east corner of the valley, and runs due east from this point till it reaches the centre of the valley just above the plain of the Raṅbhūm. From this point three branches stretch eastwards; the first inclining slightly towards the north, and forming the southern boundary of the valley of the five hills, the second runs due east and forms the western side of the ravine which leads into the Hisua-Nowāda plains, and the third turns first south, then again almost due east, and finally terminates, as I have before described, in the rocks and torrents of Bangangā. This was evidently the weakest point in the natural defences of the city; for an enemy who had once gained the entrance of the valley, (which appears to have been still further protected by a semi-circular wall outside it,) could easily pass up the gentle slope between the two last mentioned branches of the hill, and descend by an equally easy road on the northern side of the hill into the very heart of the valley. I ascended the hill on this side, and soon gained the summit, which, like that of Udayagir, is occupied by an enormous pile of ruins, and a modern Jaina temple. Inside the pagoda is a large figure of Buddha, bearing the creed, and also a comparatively modern inscription on the unoccupied portions of the pedestal. Several columns are lying about, and also portions of cornice and other ornamental carving. This was once, evidently, the site of some great vihāra or temple. Thirty paces south of the pagoda, one comes quite suddenly on the great wall, almost unbroken and entire. It is uniformly sixteen feet thick, but its height differs, at various places. It commences in the Raṅbhūm plain, and then runs in a direct line to the summit of the hill, a distance of 2300 feet. From this point an enormous embankment runs across the valley to the foot of Baibhar, and now bears the name of Jarāsandha's band. At the top of the mountain the wall turns to the east, following the crest of the central branch of Sonārgir, which now takes an almost semi-circular form, to a distance of 4100 feet. The wall at this point runs down the ravine, crosses it close to the source of the Bangangā torrent, then ascends the slope of the southern branch of the hill, and passes first along its ridge and then down its western slope till it ends in the foot to the west of the stream, as nearly as possible 12,000 feet from its commencement in the Raṅbhūm plain. The

fort at which it ends is about half the size of the one on the opposite side of the torrent. I have thus succeeded in tracing the great wall which formed the artificial defence of the valley; but strange to say, popular legends, so far from connecting it with any such purpose, make it the evening walk of the Asura king—the spot where he used to enjoy the cool mountain air after the fatigues of the day.

Before giving some account of the wild ravine to the west of the valley it may be interesting to say something of the Jaina pagodas which still adorn the hills. They are maintained and repaired by subscriptions collected all over India, and are yearly visited by thousands of pilgrims from Gwālār, Bombay, Calcutta, and Murshidābād. They all contain *charanas*, or impressions of the sacred feet of the Tirthankaras—generally carved in black basalt, but sometimes in marble, and invariably surrounded by a Nāgarī inscription. I have taken copies of the whole of them, but many have become very indistinct, on account of the oil, ghī, &c., with which they are anointed. The following are specimens of them.* In the temple dedicated to Munisuvrāta, on the Vipulā Hill, I found the following:—“On the 7th of the waxing moon in the month of Kārtika, Samvat 1848, the image of the supremely liberated sage who attained salvation on the Vipulā Mountain together with his congregation, was made and consecrated by Śrī Amrita Dharma Vāchaka.” In another of the series of temples:—“On the 9th of the waxing moon in the month of Phālguna, Samvat 1591, by Santha Sivaraja, &c., of the noble Jātada race.” On Sonārgir:—“In the auspicious Khadātara Fort [*garh*], the image of Śrī Adinatha, &c.” The other inscriptions are similar, and the dates 1819, 1823, (on Udayagir) 1816, (Ratnagir) 1830 Samvat, occur. I will give one other at length. It comes from Vipulagir, and runs as follows:—“On Friday, the 13th of the waxing moon, in the month of Asvina, when the Śāka year 1572 was current, Samvat 1707, [A. D. 1650], Suyāma and his younger brother Gobardhana, sons of Lakshmidāsa and his wife Vananibhālā, of the Vihāra Vastūvya family, of the Dopada gotra, caused certain repairs to be done to..... in Rajagrīha.” Bābū Rājendralāla Mitra remarks, that in this inscription all the proper names have the title ‘saṅgha’ prefixed to them, and this shows that the individuals in question belonged to a Buddhist congregation.

In one of the temples at the summit of Vipulagir I found the following:—“On the 7th of the waxing moon in Kārtika, this statue of Mukhtigupta, the absolutely liberated sage, was made by Śrī Saṅga, on the “Śrī Vipulachala hill, and consecrated by the preachers of salvation.” The Charana on Ratnagir bears the following:—Om, Salvation. On the 6th of

* These readings and translations were made by Bābū Rājendralāla Mitra, for whose valuable assistance I cannot be too grateful.

the waxing moon in the month of Māgha, Samvat year 1829, Shā Mānikchand, son of Bulākidāsa of the Ganghigotra and Osa family, an inhabitant of Ilūgli, having repaired the temple on the Ratnagiri hill in Rājagriha, placed the two lotus-like feet of the Jina Sri Parsvanatha there." I conclude with the oldest inscription, which is on Sonārgir—"On the 9th of the waxing moon in the month of Phalguna, in the Samvat year 1504..... of the Jatada Gotra, Rāmanāla Varma Dasa, son of Sangha Mānikadeva, son of the wife of Sangha ... barāja, son of Sangha Būnarāja, son of Sangha Devarāja." [A. D. 1447.]

The most recent of the inscriptions is dated as late as Samvat 1912, or A. D. 1855.

The ravine on the west of the valley is bounded on either side by a range of rocky hills, terminating in a narrow pathway covered with almost impenetrable brushwood and jungle. The plain between the mountains is almost level, and is covered with bushes, and broken here and there by heaps of stone. A huge embankment stretches right across it, from the foot of Sonārgir (exactly below the Jaina temple which crowns its summit) to that of Baibhār. The plain to the east of this is the Raibhūm. About a quarter of a mile beyond this a second *band*, hardly inferior in size and importance, traverses the valley almost at right angles.

The traveller Fah-Hiyan quitted the Magadha capital through the ravine and the rugged valley of Jeti-ban which lies beyond it. I have traversed the whole of the country as far as the hot springs of Tapoban, but a detailed description of it, does not find a place here, as it lies beyond the limits of "Bihār in Patna."

V.—From Tiladaka [or Tilasakya] Monastery to Kalyāṇpuṛ.

Hwen Tsiang started from the east of Patna [Pātali] and proceeded to a monastery situated at a place called Tilasakya, but strange to say one account makes the distance thirty-five miles or seven *yojanas*, and the other twenty miles or one hundred *lis*. Although I am unable to explain this discrepancy, except by the generally inaccurate distances given by the writer, I have no hesitation in identifying this place with the modern village of Tillarah or Tillardah situated, as nearly as possible twenty-four miles to the south-west of the most easterly part of Patna, (which town is nearly eight miles long) on a narrow strip of land between the Kattār and the Sonā streams, two branches of the Phalgū River. The modern village consists of a straggling line of houses and shops running from east to west, but nearly a third of them are unoccupied and fast falling to decay. The town of Tillarah, however, still bears the signs of a period of prosperity which has now long since passed away. The ruins of a fine bridge of five arches still spans the now nearly dried up course of the Sonā-nadi; a splendid masjid composed

entirely of Buddhist materials is falling to decay on the eastern outskirts of the village, and the ruined verandahs, courtyards, and tombs, which meet the eye in all directions, serve only to testify to the fact, that even during the later days of Muslimán rule, Tillárah had not altogether lost its pristine importance. Hwen Thsang tells us a good deal about the splendour of the Tillárah monastery, when he visited it in February, 637 A.D.* He writes:—"The convent of Tillárah has four courtyards, and is ornamented with verandahs, three-storied pavillions, lofty towers, and a series of gates. It was built by the last scion of the house of Bimbisára, who was a man of more than ordinary attainments, and who assembled around him men of talent and worth for every quarter. Men of letters from distant countries flocked there in crowds. There are a thousand recluses here who study the doctrine of the Greater Vessel. In the road which leads to the eastern gate, there are three viharas, each of them surmounted by a cupola hung with bells. These buildings are several stories high, and are surmounted by balustrades. The doors, windows, rafters, columns, etc., are covered with bas-reliefs in gilded copper, decorated with still choicer ornaments. A casket of relics is deposited in each vihára. From time to time a supernatural light proceeds from these, and wonders and marvels occur there." The site of this once magnificent pile of buildings is now marked by an enormous mound of irregular shape, near the banks of the Souánadi, about fifty feet high, and covered, I regret to say, with Muhammadan tombs. Nearly every grave that has been dug there, has yielded some specimen of Buddhistic art, and idols of brass and basalt are constantly found there. I have secured some very beautiful specimens of the latter, but the former are sold as soon as discovered and quickly converted into the heavy 'batísi' and 'kara' which decorate (?) the wrists and ancles of the women of the lower castes of the Hindús. Few places in India, I feel sure, would yield more archaeological treasure than this great Tillárah mound, and a shaft might be very well cut through it, without interfering with or in any way injuring the tombs on its surface.

At the eastern side of the village is a large masjid raised by a platform a few feet above the surrounding plains. This platform is composed almost entirely of pillars, portions of cornice, etc., which once belonged to some great Buddhist temple. The building is surrounded by a brick wall, and the enclosure is entered by a porch facing the east, both doors of which are purely Buddhistic. One bears an inscription of two lines, but is so much defaced as to be quite illegible. The word 'Samvat,' however, is decipherable. The masjid itself consists of one oblong chamber forty-one feet by twenty-two broad, the roof of which, is supported by three rows of pillars numbering fourteen in the centre of the building, while several others are almost com-

* *Mémoires*, Vol. II., p. 439.

pletely imbedded in the brick work. The roof is nine feet six inches above the floor. Most of the pillars are about six feet six inches high, and have separate capitals and bases. They are surmounted by long stone beams placed transversely, which in turn support the roof consisting of huge slabs of granite and basalt. The pillars are of great variety of shape and design. Some are square, both at the capital, base, and shaft; others have square bases and capitals but simple octagon shafts, while others again are oval and covered with the richest ornament. Most of these exhibit great freedom of design, and several of them are of the most graceful form. The 'Sangi Masjid' (as it is popularly called) was built on the site of a Buddhist temple, and nearly all the graves dug around it, have yielded either figures, pillars, or portions of cornice and moulding. The Musalman of Tillárah refuses to bury in any tomb from which any idolatrous image or carving has been turned up, and for this reason a grave has sometimes to be dug three or four times over. Just outside the gate of the Sangi Masjid, a man pointed out a spot, which he said had been dug out for his father's grave, and subsequently abandoned because a large image had been found there. I ordered an excavation to be made in the place indicated, and came on a splendid figure of Buddha, unfortunately broken in three pieces, about four feet from the surface. The black basalt in which it was carved, is of the finest quality, and the features quite perfect. It has been photographed. Outside the doors of the masjid is a second enclosure containing the tomb of Sayyid Yúsuf Iqbál, a Muhammadan saint who lived in Tillárah about two hundred and fifty years ago. He and his six brothers are greatly respected and revered by the Musalmáns of the Tillárah district, and the tombs of the latter are to be found at the villages of Meawan, Mandáj, Abdálpur, Fathpúr, Parbalpúr, and Bibípúr.

Down to the time of Akbar, Tillárah was a place of some considerable importance, and the capital of one of the largest parganahs between the Rájgir hills and the Ganges. Its area is in the *Áin-i-Akbari* stated to be 39,053 bighahs, and its revenue 2,920,360 dáms. It also had to furnish a force of 300 cavalry and 20 infantry.

Some of the finest figures and carvings in my collection come from the Tillárah monastery. I extract a description of them from my catalogue [No. LXII.]. Unmutilated alto-relievo figure in fine black basalt, two feet seven inches high, holding a lotus in either hand. On the head is a jewelled crown, conical in shape, with curious ornaments behind the ears. The hair is dressed in profuse ringlets. A garland passes over the left shoulder across the body. The earrings consist of two parts—a jewelled ring, passed through an oval hoop. There is a jewelled girdle around the waist. The body is covered with a tight jacket, having an ornamental facing. The legs are covered with pantaloons, and the feet with boots. A sword is girded below

the left thigh. Between the feet is a small grotesque booted figure, gathering up a set of reins in his hands and waving a whip over his shoulders. Below this is a row of seven horses galloping from left to right, and drawing a chariot. On the other side of the main figure are attendants, standing booted, and wearing curious caps and circular earrings. Above these, diminutive female figures are seen, discharging arrows right and left. The figure may be either Hindú or Buddhist." The next figure [LXIV.] is purely Hindú (for at Tillārah as in the Nalanda ruins Hindú and Buddhist idols are mixed together). Like the one last described, it is unbroken. It is "an alto-relievo in black basalt two feet four inches high, containing figures of Durgā and Siva. Siva is four-handed, and is elaborately dressed and ornamented. He is seated on a bull. The upper hand to the right grasps a lotus, while the other rests playfully on the chin of the goddess. His lower hand on the opposite side passes round her body and supports her left breast. The one above it grasps a trident. His right leg is turned outwards to the right, but the left one is twisted over the bull's head, so that the right leg of the goddess rests upon it. Her right hand passes round his neck, while the left grasps a mirror. She is seated on a lion. In *his* right ear is a circular ring and in his left an oblong drop. In her case the arrangement is reversed. His hair is rolled up into a ball first, while hers is dressed almost precisely after the fashion of George Hind's time." Another figure represents a *twelve*-handed goddess (quite perfect) with a Buddha seated in the hair. Each hand contains some weapon or ornament, *e. g.*, a string of beads, an arrow, &c. The creed is engraved above. This idol is unique as far as Bihār is concerned.

About four miles south-east of Tillārah is a village called Ongari, in which there is a splendid tank called the Sūraj Pok'har. To the north of it there is a temple containing an image of Surjya, and a pit of broken Buddhist figures. Under a heap of bricks and rubbish, I picked out two idols of great beauty and differing essentially in design from those generally found.

About a mile and a half from Ongari, across the rice fields to the south, are the remains of a large town, called Biswak or Biswa. Like Tillārah, this place gave its name to a parganah which, according to the *Āin-i-Akbarī*, once contained 35,318 bighahs, and which stretches away nearly as far east as the banks of the Panchāna. There are two enormous tanks to the east of the village, and two mud forts of considerable size and antiquity. To the north of the first tank is a long line of tumuli, which mark the site of some large Buddhist viháras. I cleared away one end of it, and came on a perfect heap of figures, some of them quite unique. With one exception (that of an idol of Ganesh) all the remains discovered by me were purely Buddhistic. One figure is eight-handed and somewhat resembles the many-handed divinity of Tillārah, and another is a Padmopāni Buddha nearly life-

size. Besides the figures, I dug out a *charana* almost like these of Rájagriha.

Islámpúr is about four miles to the south-west of Biswak and is still a very flourishing town, doing a good trade in rice and tobacco, and affording a resting-place for the pilgrims who pass down in great numbers from the north of Bengal en route for Gayá. To the extreme west of the village I lighted on the remains of a large vihára, many of the granite columns of which still exist intact, but I regret to say that the bulk of the building was pulled down some years ago by the zamindár of the place, one Chaudhri Zuhúrul Haq, to construct the platform of his new masjid, and I am told cart-loads of figures, &c., were used for the same purpose. The old men of the place remember the time when the building was intact, and say it resembled very much the 'Sangí Masjid' of Tillapah and contained a Nágari inscription, and a great deal of sculpture. About a mile south-west of Islámpúr, is a small village called Iechos, which was doubtless the site of a great Buddhist temple and vihára. I found the remains of a tope close to the old mud fort, and saw in a garden a great figure of the ascetic Buddha, nearly six feet high. A short distance off, I found the remains of two very fine basalt columns, the largest piece being still six feet long. The base is 2 feet high and $1\frac{1}{2}$ feet broad. Next to it comes a circular band or ornament one foot four inches wide, each corner being decorated by a sprig of very elaborate scroll work, the stone behind which is hollowed out leaving the inner circle unbroken. This is a constant feature in Buddhist pillars, and I found a miniature reproduction of this column at Logáni, a mile to the north of Bihár. Above the ornament in question, the shaft becomes octagon and there is a lion-rampant at each of the four corners. This portion of the pillar is two feet in height, and is decorated with small arched canopies and pillars about a foot high, surmounted by fork-shaped pieces of scroll work. Above this is second line of niches. The quality of the stone is very fine and holes have been rubbed in its base by persons who imagine its touch a sovereign remedy for swollen necks and throats! One mile south-west of Iechos is a large village called Mubárákpúr. To the south is a large tank and at its north-west corner a huge mound marking the site of a temple or vihára of great importance. I moved away a great portion of the rubbish and succeeded in recovering a large quantity of very beautiful figures. Notably I may mention a basalt arch, with a gargoyle face for its (supposed) keystone and long lines of rich carving right and left, a figure of Jama, with a background of flames, and a large mixture of Hindú and Buddhist idols, more than forty in number. Several of there were unfinished, and others scarcely begun. For this reason, I suppose Mubárákpúr to have been the site of a the sculptor's studio.

About 300 yards to the south of the Mubárákpúr ruins is a village known as Afzalpúr Sarunda. Here again are the remains of a tope now

covered by a mud fort. To the south of the village is another large tank and I found several Buddhistic figures on its banks. To the west of it is a fine uncultivated plain studded with mangoe groves and stretching away as far as the eye can reach to the distant hills of Barābar. In the western outskirts of the plain, and not far from the side of the tank, are the marks of a large tumulus, and several Buddhist figures surround it. Following a road for about a mile to the south across the plain, I came quite suddenly on a large tumulus on the outskirts of a village, the name of which is Lāt. About a hundred yards to the east of this place, in the midst of a rice field lies an enormous column hewn from a single stone *fifty-two feet in length*. The base is square, and seven feet long by three broad; the capital is of the same shape, but is five feet long and four broad. The shaft has sixteen sides, each about six inches in breadth. There is not a vestige of a temple or building in this plain of rice, fields, in fact one might almost say as appropriately of it, as of the Sundarbān, that "there is no stone big enough there to throw at a dog." The appearance of this enormous solitary column lying by itself, half buried in the sandy soil which surrounds it, is very striking. The villagers of Lāt [the vernacular for 'a pillar'] have their own story about their venerated deity (for pūjā is daily offered to it), and it is as follows. More than a thousand years ago Sibai Singh reigned in Tīrhut, having Darbhāngah for his capital. The king's servants were martial men of the Rājput caste, and his favourite was a soldier named Ranjit Singh. One day the king went to see the progress of the works at a tank which he was excavating near his palace, and Ranjit Singh was of his guards. The king and his companions began to throw up the earth and assist the workmen at their labour, but Ranjit stood aloof leaning on his spear. This provoked the king who began to chide him for his indifference. The soldier replied, 'I am by caste a Khatria, my business is to fight or to execute any great commission you may entrust me with—not to dig or build.' On this the king wrote a letter to the prince of Ceylon, who was no other than the mighty Rāvan, and requested him to send two colossal pillars for the new tanks.* The execution of this order was made over to Ranjit Singh. Taking the letter, Ranjit made his way to the "golden island of the south," and having procured the pillars, enlisted the aid of the "dhūts," or supernatural messengers to convey them to Tīrhut. These, although possessed of enormous strength could only travel by night. The first reached Darbhāngah in safety, but the bearers of the second tarried at Sarunda to get oil for their torches, and the dawn breaking upon

* To place a large pillar in the centre of a tank was a custom of the times. In a great tank just outside Bihār there is a column about twenty feet high still standing. This custom has hardly ceased to prevail. General Claude Martin erected a colossal pillar in the middle of the artificial lake which faces the Indo-Italian palace which he built in Lakhanau.

them suddenly they fled, leaving their burden in the open plain." It is said that the kings of Darbhanga have often tried in vain to raise the Láṭ. Mítarjít Singh (who was alive in the time of Lord Cornwallis) spent large sums in endeavouring to remove it, but was at last deterred by an apparition of the pillar, which warned him in a dream that the accomplishment of his purpose would lead to his certain destruction. The village regard the Láṭ with the most superstitious veneration and declare the last time it was polluted by the touch of an unbeliever, the villagers were promptly visited a conflagration.

About a mile to the south-east of the Láṭ is a village called Dápthú, the site of a great mass of ruined temples, of which a long account is given in Montgomery Martin's 'Gya and Shahabad,' pp. 97-100. I quote it in detail merely for the purpose of illustrating how quickly buildings, even of the most solid description, disappear, under the influence of the varying seasons of an Indian climate.

"Immediately west from the temple called Parasnath is a line of four temples running north and south. The two extreme temples of this line are said to be those of Kanaiya, the images of which entirely resemble those usually called Lakshmi Narayan or Vasúdeva, and are very large. I believe that those which have two attendants on each side are usually called by the former name, and those which have only one attendant as this, are called by the latter, but I did not at first attend to the distinction, and cannot say whether or not it is generally observed. The temple furthest north consists of one chamber supported by antique columns of granite.

"The brick work had fallen and was rebuilt by Rájá Mítarjít's grandfather, but has again decayed a great deal. The door is of stone and is highly ornamented. The original sides remain, but the lintel has been removed, and its place supplied by one of the sides of the door of Parasnath which will perhaps show that before the repair was given, the temple had been so long a ruin that its door had been lost. The southern temple of Kanaiya is an entire ruin, but the image remains in its place.

"The central temple next to this is the most entire, and contains a large image, called Surya, and very nearly similar to that of Akbarpúr. On one side is placed the usual figure called Lakshmi Narayan. The temple consists of a flat-roofed natumundir porch, or propylacrum and of a pyramidal shrine or mundir. The roof of the former consists of long stones supported by stone beams and these by columns. The interstices of the outer rows are filled with bricks to complete the walls.

"The shrine, except the door is constructed entirely of brick. Both the door of the shrine and the stone-work of the porch are of much greater antiquity than the parts that consist of brick, which have probably been several times renewed; but there is no appearance that the image or stone-

work has ever undergone alteration ; and this seems to be by far the most ancient temple of the district that still remains tolerably entire.The porch consists of four rows of columns, the interstices between the two outermost of which, as I have said, are filled up with bricks to form the walls. Round the porch, but not built into the wall, have been placed a row of small images intended as an ornament and not at all consecrated to worship.

"They were placed in the following order :—A Surya similar to that worshipped, Jagadamba, as usual killing a man and a buffalo, a Haragauri as usual, a Ganes dancing as that at Dinajpur, another Haragauri as usual, a Lukshmi Narain or Vasudeva, as usual ; another Surya ; a male called Vishnu, like Vasudeva but in armour ; one called Gauri Sankar represents a male sitting between two females and leaning one foot on a crocodile. There is here neither bull nor lion as in the common Gauri Sankar, or Haragauri. Another Ganes, another Gauri Sankar or Haragauri. Another Ganes ; another Gauri Sankar, or Haragauri, another Ganesa, another Gauri Sankar like the last, a Narasingha in the form usual in the ancient temples of this district, a strange male figure, called Trinikrama Avatar, which I have seen nowhere else ; a female sitting on a bull and leaning on a porcine head which is called Varaha, but is quite different from that so-called at Baragang, nor have I seen it anywhere else ; although among such immense numbers of images as are scattered through this district, many may have escaped my notice.

"On the outside of the door is a very curious sculpture, which is called Bhairau, but seems to me to represent a prince riding out to hunt the antelope. He is accompanied by archers, musicians, targeteers, women, dogs, &c. The animal on which he rides is by the natives called a sheep, but I presume, was intended to represent a horse. The last temple of the place immediately north to that of Surjya is an entire ruin, and has contained an enormous linga, before which is placed the form of Gauri Sankar that is common at the place."

To the south of the village of Dápthú is a large dried up tank, now a flourishing rice field. To the north of this is a huge mound covered with the densest jungle. I made an excavation through it, and found a colossal figure of Vishnu somewhat mutilated, and a doorway of great beauty. This has been photographed. It consists of three pieces. The two lintels are ornamented with boldly executed mouldings to the right and left, and towards the centre by lines of figures, apparently those of dancers and musicians. The chief feature of the upper cornice is a crowd of figures supporting a crown, extended over some object of veneration, which has been too much mutilated to admit of description. The musical instruments, dresses, etc., are precisely those of the present day.

Along the western side of the tank are the remains of a row of temples, four in number, of which two have yielded completely to the ravages of decay, and the sites of which are only marked by mounds of earth, broken pillars, and fragments of idols. The second temple still remains in a tolerable state of preservation, and the fourth, although very dilapidated, is still perfect enough to allow the spectator to form a correct idea of its size and proportions. The second temple of the row is built of bricks, rather smaller than those of Bargaon, and faces the east. There is a stone cornice at the top, and the entrance consists merely of a narrow opening in the brick work. This leads to a court or porch, twenty-three feet square, and ten high, as measured from the inside. The roof consists of long slabs of grey stone laid from east to west and covered with a thick layer of plaster. This is supported by sixteen columns, twelve of which are almost entirely imbedded in the brick work, while four are as near as possible in the centre of the building. These pillars have square bases and capitals and octagon shafts, and are surmounted by separate capitals oblong in shape, being about four feet in length, and about a foot thick. Various idols are grouped around the chamber. There is a distance of about six feet between the pillars. At the west end of the room is a very finely carved doorway (of which Montgomery Martin's drawing conveys a very incorrect idea). It measures seven feet five inches in width. The pillars on either side are two feet wide, and six feet high, and the slab which surmounts them is of about the same size. The whole is covered with a very beautiful geometrical pattern. The actual doorway is only two feet nine inches wide. It leads to a small chamber eight feet square, the roof of which has fallen in, but which I suppose was once covered by a dome or eupola. This contains a large *booted* figure of Surjya much mutilated, and a very perfect one of Vishnu, similar to those recovered from Bargaon, and now in my collection.

The whole building resembles most strongly the Buddhist temple discovered by me on the Baibhár hill at Rajgriha, of which a full description has been given in Chapter IV. Strange to say, I only found two purely Buddhist images amongst the ruins of Dáplú; but I have little doubt the temples were originally intended for Buddhist worship, and this is confirmed by the fact that several figures [most probably of Buddhas] appear to have been *deliberately removed* from the ornamentation of the doorway found by me in the mound to the north of the dried-up tank. The other temple has no inner room, but is otherwise similar in shape to the first. The lintels of the door (now fallen down) are very fine, and are almost identical with specimens from Nalandá in my collection.

Two miles to the south-east of Dáplú is another village, called Sarthua, where I found the remains of a tope (nearly levelled by time) and a figure of Buddha, now in my collection, and rather larger than life. It is in the

usual attitude, and the Buddhist creed is inscribed over the halo which surrounds its head. Four miles east of Sarthua is a place called Mahmûda, once the site of a vihāra. There is a large mound of bricks to the east of the village, at the top of which several granite columns have been collected and arranged, forming as it were a miniature reproduction of the Sangi Masjid at Tillārah. Leaving this village, and going seven miles to the north-east, I arrived at a hamlet called Sawra, which is exactly two miles to the south-west of the site of the once great Nālandā monastery—the modern village of Bargāon. We can now begin to trace again the foot steps of Hwen Thsang, whom we left at Tillārah setting out for the Guṇamati monastery, the sacred Pīpal tree of Bodh-Gya, and the other holy places to the west and south of the mountains of Rājagriha. We must now suppose for a moment that he has finished his inspection of the ruins of Kusā-gārapūra, and having arrived within the precincts of “our sacred mother Nālandā,” is describing the neighbourhood of the convent.* “Au sud-ouest de Nālanda il fit huit à neuf li, et arriva à la ville de Koulika. Au centre s’élevait un stoûpa qui avait été bâti par le roi Açoka. C’était le pays natal du vénérable Mogalan-pouttra. A côté de cette ville il y a un stoûpa. Ce fut dans cet endroit que le vénérable Mogalan-pouttra entra dans le nirvana définitif; le stoûpa renferme les reliques de son corps.” *This spot can be most satisfactorily identified with Sacra.* I found there the remains of a large stûpa and nine very perfect Buddhist idols. I again return to the pilgrim’s narrative.† “Après avoir fait quelque li à l’est du pays de Mogalan-pouttra il rencontra un stoûpa.” This must be Jagdespūr—one mile to the east of Sawra. This is strangely confirmed by the existence of an enormous tumulus there, together with a gigantic alto-relievo figure of Buddha, now worshipped as the goddess Rukhmini. Hwen Thsang then seems to have gone twenty lis to the south-east‡ and to have arrived at the town of Kalipinika. “On y voit au centre,” he writes. “un stoûpa bâti par le roi Açoka; c’était le pays natal du vénérable Çaripouttra. Le puits de sa maison existe encore aujourd’hui. A côté du puits il y a un stoûpa. Ce fut-là que le vénérable Çaripouttra entra dans le nirvana. Un monument renferme les reliques de son corps.” *This corresponds almost exactly with the position of Chandī-mau, four miles south-east of Nālandā.* This singularly picturesque spot is situated about two miles from the foot of the Rājagriha hills and near the banks of the Panchāna. The surrounding country is well-wooded, and a beautiful tank forms the western boundary of the village, which possesses a large mud fort, said to have been built early in the last century by Kūndār Khan Maṇ of Rājagriha. To the south of the tank is the ruin of a stûpa, near which I found a pile of Buddhist idols—most of them much mutilated. I recovered, however, one very fine figure of Buddha, the description of

* Mémoires, Tom. II., p. 51.

† Mémoires, p. 51.

‡ Idem, p. 54.

which I quote from my catalogue. [XV.] Statue of Buddha, in black basalt, five feet three inches high, seated on a throne, divided into two portions. The upper consists of a double row of lotus leaves, and the lower is divided into five compartments—containing representations of devotees at either corner—then two lions-couchant and, in the centre, the Wheel of the Law supported by a deer on either side. The figure is seated in the attitude of meditation. The head is surrounded by an elaborate halo, above which rises a three branched pāpal tree; on either side of the head is a seated Buddha, and on either side of the body, two attendants each two feet high, and most elaborately dressed. The one to the right has a diminutive Buddha, seated in the hair, which is twisted into a point. These figures are very richly ornamented with a spangled “dhūtī,” and highly wrought bangles and necklace. The usual flower garland surrounds the body, and a lotus is grasped in the left hand.” A little further to the east, I came on another large heap of Buddhist carvings—door lintels, chaityas, etc., and the pieces of an enormous Buddha as large as the Teli Bhandār at Nālandā, or the Sri Bullun Buddha at Titráwan. About half a mile to the south-west is another village—Kalyānpūr. There I also found ruins of more Buddhist buildings, and a number of idols. The principal of these was that of a goddess, five feet high and seated on a throne, almost exactly similar to that just now described. The figure is eight-handed and the breasts are mutilated. The waist is encircled by an elaborately sculptured girdle, from the centre of which a chain and jewel depends over the pedestal. A star patterned garment descends from the waist as far as the ankles of both feet. The left foot depends from the throne, and rests on a lotus blossom, supported by the head and arms of an attendant, while a second devotee holds a flower in his hand a short distance off. An elaborate ornament encircles the neck and the lower part of the arms. The hair is gathered up in a chignon on the top of the head, but ultimately falls in ringlets over the shoulders. Several of the hands are mutilated. The upper hand on the right side grasps a circular shield, and the wrist is decorated by two bangles. The second wrist is encircled by a ‘batsī.’ The third hand (having three bangles on the wrist) grasps a bow and the fourth a shell. The lower hand on the right side rests on the right knee; the next holds a sword, and has one bangle on the wrist. The third is ornamented with the batsī, and the fourth, having two bangles or armlets on the wrist, is in the act of drawing an arrow from the quiver. On either side of the heads are two attendants holding scrolls or garlands. Around the large figure were strewn innumerable fragments of Buddhas of all sizes. Three miles to the south-east of Kalyānpūr, one arrives at the foot of the Indra-Saila hill, which rises from the bank of the Panchana river, just above the village of Giryak. Here again there is little difficulty in following the steps of Hwen Thsang,

and I cannot do better than quote his own words.* “A l'est du stoûpa du Çaripoutra il fit environ trente li et arriva à une montagne appelée Indra-çilâ-gouha. Les cavernes et les vallées de cette montagne sont ténébreuses : des bois fleuris la couvrent d'une riche végétation. Sur le passage supérieur de cette montagne s'élèvent deux pics isolés. Dans une caverne du pic méridional il y a une grande maison taillée dans le roc : celle est large et basse. Sur le pic oriental il y a un couvent. Devant le couvent il y a un stoûpa qu'on appelle Hansa-sânghârama.”

VI.—The Indra Saila Peak.

The range of rocky hills, which run in a north-easterly direction nearly forty miles, abruptly ends at Giryak. The foot of the mountain is washed by the waters of the Panchâna river, which here leaves the Hisua-Nowâda valley, and slowly makes its way southwards through the Bihâr plain to the Ganges. On the east side of the river is an enormous mass of ruins, which appears to mark the site of a Muhammadan town and fort, which tradition holds to have been built by Kâmdâr Khân Maïn nearly two centuries ago, to defend the fertile fields of Bihâr from the frequent incursions of the predatory Rajwârs. Above the western bank rise the two precipitous peaks which crown the Indra-Saila hill. The reader will remember that in speaking of Râjgir I described a narrow ravine which stretched away to the east between Udayagir on the south, and Ratnagir and the Devaghât hill on the north. This valley terminates at Giryak, about a mile to the south-west of the Indra Saila peak. From the northern side of this mountain, a rocky hill—the Masellia-pahâr, (as the Râjwârs call it)—runs to the south-west, having almost a semi-circular shape. This hill meets the offshoot of Udayagir, from which it is only separated by a passage, far narrower than that of the Bangangâ. The face of the Masellia-pahâr near the pass is almost a sheer cliff, but towards the centre of the hill the ascent is more gradual, and it was therefore fortified by a wall sixteen feet thick, which follows closely the shape of the mountain. The eastern entrance to the Valley of the Five Hills seems, therefore, to have been quite as strongly fortified, both by art and nature as the Bangangâ and Rajagriha gates. It is about three hundred feet from the plain, and just above the entrance of the ravine that the Gidda-dwâr cave is situated. Seen from below, it looks like a small hole in the rock. Its entrance is gained with difficulty, for the last eight feet of the cliff are perpendicular, and have been faced by a stone wall, the remains of which are tolerably entire. This combination of the natural and the artificial reminds one forcibly of the front of the Sattapânni cave on the Baibhâr hill. The entrance to the cavern is sixteen or seventeen feet wide, and its roof semi-circular in shape. There is an outer chamber forty feet long, from which a fissure in the rock appears to lead to the interior of the hill,

* Idem, pp. 54-5.

but abruptly terminates at a distance of sixty or seventy feet from the entrance. This shows the tradition which makes the fissure in question a subterranean passage leading to a tower on the Indra-Saila hill to be perfectly erroneous. The atmosphere in the cave is most oppressive and, in addition to its being the home of a motley tribe of vultures and kites, a sulphureous smell proceeds from the rock which has a sickening effect on the explorer. Crossing the mountain in a north-easterly direction and passing over the wall [popularly called 'Jarásandha's band'], one comes quite suddenly on the eastern peak of the Indra-Saila mountain. This is crowned with a stone platform, about twenty-five feet high, one hundred and fifty long and one hundred broad, which appears to have been the site of a large vihāra and the usual temple. The wall of the vihāra towards the east is still tolerably entire, and was originally composed of enormous bricks similar to those found at Nālandā and Rajagriha. Besides this wall, the remains of the temple towards the western end can clearly be traced, and several granite pillars in the vestibule are still erect. The whole of these ruins should be carefully excavated at the expense of Government, for the vihāra in question was one of great importance and antiquity. I shall afterwards have occasion to refer to the monastery again, when I come to speak of it in relation to Hwen Thsang's visit to the Indra-Saila hill. From the eastern door of the vihāra a broad stone staircase or roadway leads to the eastern peak, which is crowned by a brick tower, sixty-five feet in circumference and about twenty-five feet high. This edifice is generally described as the *baithak*, or resting-place, of Jarásandha, and the Asura prince is stated in popular tradition to have been accustomed to sit on this throne of brick while he bathed his feet in the Panchāna torrent a thousand feet below. The length of the staircase connecting the two peaks is four hundred feet. The eastern peak is called by the country people Mamúbhagna, or Phúlwāria pahār—the western, Hawēlia-Pahār. This brick tower rests on a square platform, now a mass of ruins, and there appears to have been a vault or well in the centre. I have not the slightest doubt that the so-called tower is in reality the remains of a stūpa, the outer portions of which have been ruined and removed by time. A deep incision has been made in the base, but I believe nothing was found there except a packet of Buddhist seals in wax. To the south-west of the stūpa are the remains of an artificial tank or reservoir, about one hundred feet square. This is popularly supposed to have been Jarasandha's flower-garden. From the ruins which crown the summit of the hill, a stone staircase or road leads to the plains beneath. This first stretches down the south side of the hill to a distance of three hundred feet, when one suddenly comes on a small stone stūpa; it then turns to the east, and after traversing a distance of sixteen hundred feet, I arrived at a spot where there are the ruins of a stūpa on either side of the path. Just

at this place there is a sort of plateau, which is crowned by the remains of a perfect cluster of topes. The path then continues to traverse the east side of the hill (passing two small modern temples containing footprints or *charanas* of Vishnu), and at a distance of eight hundred feet reaches the banks of the Panchána.

Dr. Buchanan visited Giriyak nearly half a century ago, and a glance at his remarks will show the devastation which an Indian climate can bring about in a comparatively short time.*

"I now proceed to describe the ruins on Girebraja or Giriyak hill. The original ascent to this is from the north-east, and from the bottom to the summit may be traced the remains of a road about twelve feet wide, which has been paved with large masses of stone cut from the hill, and winds in various directions to procure an ascent of moderate declivity. When entire a palanquin might have perhaps been taken up and down; but the road would have been dangerous for horses and impracticable for carriages. In many places it has now been entirely swept away. I followed its windings along the north side of the hill, until I reached the ridge opposite to a small tank excavated on two sides from the rock and built on the other two with the fragments that have been cut. The ridge here is very narrow, extends east and west, and rises gently from the tank towards both ends, but most towards the west, and a paved causeway five hundred feet long and forty wide, extends its whole length. At the west end of this causeway is a very steep slope of brick, twenty feet high and one hundred and seven feet wide. I ascended this, by what appeared to have been a stair, as I thought that I could perceive a resemblance to the remains of two or three of the steps. Above this ascent is a large platform surrounded by a ledge, and this has probably been an open area, one hundred and eighty-six feet from east to west by one hundred and fourteen feet from north to south, and surrounded by parapet wall. At its west end, I think, I can trace a temple in the usual form of a mandir, or shrine, and natmandir, or porch. The latter has been twenty-six feet deep by forty-eight wide. The foundation of the north-east corner is still entire, and consists of bricks about eighteen inches long, nine wide, and two thick, and cut smooth by the chisel, so that the masonry has been neat. The bricks are laid in clay mortar. Eight of the pillars that supported the roof of this porch project from among the ruins. They are of granite which must have been brought from a distance. They are nearly of the same rude order with those in the temple of Buddha Sen at Kanyadol and nearly of the same size having been about ten feet long, but their shafts are in fact hexagons, the two angles only on one side of the quadrangle having been truncated. The more ornamented side has probably been placed towards the centre of the building, while the plain side has faced the wall. The mandir

* Montgomery Martin's 'Gya and Sháhábád.'

has probably been solid like those of the Buddhists, no sort of cavity being perceptible, and it seems to have been a cone placed on a quadrangular base, forty-five feet square and as high as the natmandir. The cone is very much reduced, and even the base has been decayed into a mere heap of bricks. On its south side in the area by which it is surrounded, has been a small quadrangular building, the roof of which has been supported by pillars of granite, three of which remain. Beyond the mandir to the west is a semi-circular terrace which appears to have been artificially sloped away, very steep towards the sides and to have been about fifty-one feet in diameter. The cutting down the sides of this terrace seems to have left a small plain at its bottom, and an excavation has been made in this, in order probably to procure materials.

"Returning now to the small tank and proceeding east along the causeway, it brings us to a semi-circular platform about thirty feet in radius, on which is another conical building quite ruined. East from thence and adjacent is an area forty-five feet square, the centre of which is occupied by a low square pedestal twenty-five feet square divided on the sides by compartments like the pannelling on wainscot, and terminating in a neat cornice. On this pedestal, rises a solid column of brick sixty-eight feet in circumference. About thirty feet up, this column has been surrounded by various mouldings, not ungraceful, which have occupied about fifteen feet, beyond which what remains of the column, perhaps ten feet, is quite plain. A deep cavity has been made into the column probably in search of treasure, and this shows that the building is solid. It has been constructed of bricks cemented by clay, and the outside has been smoothed with a chisel and not plastered. Part of the original smooth surface remains entire, especially on the east side. The weather on the west side has produced much injury. To the east of the area in which this pillar stands, is a kind of small level, called the flower-garden of Jarāsandha, an idea perfectly ridiculous, the extent being miserable, and the whole a barren arid rock."

This description of the ruins of the so-called tower, written when it was far less dilapidated than it is at present, confirms me in my opinion that the original building was a stûpa.

The ruins on the Giryak hill are undoubtedly identical with the religious edifices visited and described by Hwen Thsang. The subject is at once so important, and so interesting, that I quote from him in full.

"Après avoir fait encore trente li à l'est, il arriva à la montagne appelée In-to'-lo-chi-lo-kiu-ho-chan (Indra-cilâ-gouhâ).

"Devant le couvent du pic oriental de la montagne, il y a un stoûpa. Ce couvent s'appelle Seng-so-kia-lan (Hañsa Sanghârâma). Jadis les religieux de ce couvent suivaient la doctrine du petit Véhicule, appelée la doctrine graduelle, et faisaient usage des trois aliments purs. Un jour, le Bhikhou,

qui était l'économe du couvent n'ayant pu se procurer les provisions nécessaires, se trouva dans la plus grande perplexité. Il vit en un moment une troupe d'oies qui volaient dans les airs. Les ayant regardées un instant, il s'écria en riant :

"Aujourd'hui, la pitance des religieux manque complètement ; *mahâ-sattvas* (nobles êtres), il faut que vous ayez égard aux circonstances."*

"A peine avait-il achevé ces mots, que le chef de la troupe tomba du haut des nuages, comme si on lui eût coupé les ailes, et vint rouler au pied du Bhikebou (de l'économe). Celui-ci rempli de confusion et de crainte, en informa ses confrères, qui ne purent lui répondre qu'en versant des larmes et en poussant des sanglots : Cet oiseau, dirent-ils entre eux, était un Bôdhi-sattva ! et nous, comment oserions-nous le manger ? Quand Jou-lai (le Tathâgata) a établi ses préceptes, il a voulu par degrés nous détourner du mal. Mais nous, nous nous sommes attachés à ses premières paroles, qui n'avaient d'autre but que de nous attirer d'abord à lui, et nous les avons prises pour une doctrine définitive. Insensés que nous sommes ! nous n'avons pas osé changer de conduite, et par là, nous avons causé la mort de cet oiseau. Dorénavant, il faut suivre le grand Véhicule, et ne plus manger uniquement des trois aliments purs.

"Alors ils firent construire une tour sacrée, y déposèrent le corps de l'oie (haïsa), et l'ornèrent d'une inscription, pour transmettre à la postérité le souvenir de son pieux dévouement. Telle fut l'origine de cette tour."

In the "Mémoires sur les Contrées Occidentales," the account varies but little from that which I have quoted from the older volume. The writer here tells us that the pilgrim went 30 lis from the stûpa of Sâriputra (*i. e.*, from Chandimau), and arrived at the Indra-saila hill. The valleys and caves of the hill were gloomy, but its sides were covered with luxuriant vegetation. The summit of the mountain was crowned by two peaks, and in the western one was a great chamber hewn in the rock. This answers with tolerable accuracy to the position of the Gûlâ-dwâr cave. He then proceeds to tell the same story of the miraculous forty-two questions which Fah Hiyân relates of the "isolated rock" of Bihâr.

In my opinion General Cunningham's supposition that both hills are the same, is based on insufficient data, especially as one is called in Chinese *Siao-kou-shy-shan* (*i. e.*, the Bihâr rock) and the other *Yn-tho-lo-shi-lo-kin-ho*, (*i. e.*, the Giryak hill),† which certainly seem to be far from one and the same thing. Putting aside all question as to position or language, I maintain that a glance at a description of the two hills will shew them to be entirely different. "*Siao-kou-shy-shan*" is distinctly stated to be the *little mountain of the solitary rock*,‡ while *Yn-*

* Vie de Hwen Thsang, p. 161-3.

† Laidley's Fa Hiyân, p. 265.

‡ do. do., p. 264.

tho-lo-shi-lo-kin-ho (otherwise rendered, *In-t'o-lo-chi-lo-kin-ho-chan*) is spoken of as a *lofty mountain with "caverns et vallées ténébreuses."** In the one there is *no cave*—in the other *there is*.

I shall speak further on this subject, when I come to discuss the identification of Bihâr, and hope to adduce such arguments as will put the matter beyond the possibility of doubt.

However this may be, it is quite certain that the great vihâra of the Wild Goose was one of the most sacred, and most popular of the Buddhist mountain-monasteries. I find it distinctly mentioned in the inscription of the Ghosrâwan Vihâra, which dates from about the 9th century of our era. From it we learn that the pious Viradeva, after the completion of numerous acts of religious merit, "erected two crest-jewels in the shape of chaityas on the crown of Indra-saila peak, for the good of the world."

We must now wend our way towards the convents of the north-east of Bihâr.

VII.—The Monasteries of Ghosrâwan and Titra'wan.

The village of Ghosrawan lies exactly six miles to the north-east of the Indra-saila peak at Giryak, eight miles to the east of the great Nâlandâ monastery, seven miles south-east of the "isolated rock" of Bihâr, and ten miles north-east of the ruins of Rājagriha. Although the Buddhist remains found at this place are of great interest, and the inscription, which lay amongst the débris of its once magnificent vihâra, is of more than ordinary importance, the name of Ghosrâwan does not appear either in the pages of Buchanan or in those of the 'Ancient Geography of India.' The modern village is inhabited almost entirely by men of the Bhāban caste, who distinguished themselves by a small mutiny on their own account during the horrors of 1857, which ended in the total destruction of the village by fire, and the exile of a great portion of the insurgents. Although many years have since passed away, and the poppy and rice lands which surround it, are as luxuriant and fertile as ever, Ghosrâwan has never recovered its prosperity, and roofless tenements and blackened ruins still tell the story of this "seven-days war." The Bhābans, which form such an important component of Bihâr society, take their origin, according to tradition, from the days of Jarāsandha's rule in Rājagriha, and are, down to the present time, as turbulent and litigious as history represents them to have been in former years.

The character of the caste has been severely handled by the national proverbs of the Biharis;† and I cite two of them below, for they are interest-

* Vie de Hwen Thsang, p. 161.

† بابہن کتا ہاتھی تیدوں ذات کا گھاتی

Bhābans, dogs, and elephants are always fighting amongst themselves.

سیل سوت ہرنس لے بیچ گنگی دھار اٹکلے بابہن کہ تو نکرے اعتبار

Even if a Bhāban swim in the midst of the Ganges stream on the sacred idol, his son's head, and the Shāstras, he can in no way be trusted.

ing, as speaking of the men who now cultivate the fields, which once, I doubt not, yielded the necessaries of life to the recluses of the vihāra of Virādeva, described a thousand years ago, as being "as lofty as the mind of its founder, and which the travellers in aerial cars mistake for the peak of Kailāsa or the Mandara hill." Six hundred feet to the south-east of the village, there are the remains of four temples or topes, but time has reduced them to nearly a level with the surrounding plain.

On a line with these tumuli is a mud fort with a tower at either corner, which measures seventy feet from east to west, and eighty from north to south. In the middle of the village, about two hundred feet to the north of the fort, is a row of very fine idols commonly designated as the Singhabāni Thān. All the figures (with one exception) are purely Buddhistic. In the centre of them is an idol of Durgā, carved in black basalt. It is four feet high and three wide, and is more modern than the Buddhist figures which surround it, and very inferior to them in design and execution. The goddess is represented as seated on an enormous lion, whose mane curiously reminds one of the wigs in use by our Judges at home, when they go in state to Westminster-hall on the first day of Term. The right foot is drawn up in front of the body, while the left rests on a lotus flower. The figure is eight-armed, and each arm grasps the usual emblems. To the left of this is a very beautiful statue of Buddha, four feet high. The figure is seated in the attitude of meditation on a cushion covered with elaborate ornamentation, which rests on a throne supported at either corner by a lion-couchant. From the centre of the throne depends a cloth, the folds of which are inscribed with the Buddhist creed, and covered by the representation of a female goddess in the act of trampling upon an adversary, under the shade of an umbrella, held by an attendant from behind. On either side of the cloth, a figure (one male and the other female) is seen in the act of making an offering. The main figure is covered by a long cloak, and the hair is knotted. A halo surrounds the head. There is a cushion at the back of the throne. Above the head is a "chaitya" surmounted by a pipal tree. Around the main figure are eight smaller ones, seated in different positions on small thrones, six of these holding lotus flowers of different design; in one case a bud, in another a cluster, in a third a full blown flower, and so forth. The seventh grasps a sword, and the eighth a sword in one hand and an unfurled banner in the other. At the bottom of the figure, that is under the lions which support the throne, is a double row of lotus leaves, this being the very converse of the ordinary arrangement. The details of this figure are very curious, and I have never seen them in any other. At the side of it is a standing one of Buddha about four feet high. The body is covered by a long cloak and the hair is knotted, to the right an attendant holds an umbrella over the head, and to the left is a three-headed figure holding a bell in one hand and a torch in the other.

To the right of the Hindú idol is a figure of Buddha under a pillared canopy. The next to the right is a figure of Buddha, four and a half feet high, which resembles in almost every particular a still finer idol which I excavated from the ruins of the Vihāra. This latter being now in my own collection, I refrain from any detailed description in the present case, but I may mention that the main figure is surrounded by five smaller ones, the first being seated in the hair and the others to the right and left of head and hands respectively.

Five hundred feet west of the Singhabāni, one arrives at the ruins of the vihāra and temple. The former now consists of a mound, having a circumference of some 200 feet, and the latter of an oblong mass of bricks and rubbish, measuring 120 feet by 70 and about 15 or 20 feet above the level of the surrounding country. The mound is strewn with broken Buddhistic idols, and to the east of it was found a fine piece of black basalt one foot nine inches long, by one foot three inches broad, and covered by a very perfect inscription of nineteen lines. I have had the good fortune to secure a reading and translation of this, both by Babú Rājendralāla Mitra and Professor Rāmkrishna Gopāl Bhandarkar, M. A., which I now give in original, and for which I beg to express my thanks.

I.—*The Ghosrāvan Inscription. Transcript by BA'BU' RA'JENDRALĀLA MITRA.*

- १ ॐ श्रीमानमौ जयति सत्त्वहितप्रवृत्तसन्मानसाधिगततत्त्वनयोमुनीन्द्रः । क्षेमार्थिनां
दुरितनक्रदुरासदान्तः संसारसागरसमुत्त—
- २ रणैकसेतुः ॥ अस्यास्मद्गुरवो दभूवरवलाः सम्भूयर्तुं मनः का लज्जा यदि कव-
लो न वलवानस्मिन्नलोकप्रभौ । इत्यालोचयते—
- ३ व मानसभुवा यो दूरतो वर्जितः श्रीमान्विश्वमशेषमेतदवताद्वेषौ सवज्जासनः ॥
अस्युत्तरापथविभूषणभूतभूमिर्देशात्तमा न—
- ४ गरुडारदति प्रतोतः । तत्र द्विजातिरुदितोदितवङ्गजन्मानान्मेन्द्रगुप्त इति राज
सखो बभूव ॥ राजप्राकया द्विजवरः सगुणीय—
- ५ क्षिप्त्वा युक्तो रराज कलया मलया यथेन्द्रः । लोकः पतिव्रतकथा परिभावना-
य सङ्कीर्त्तनं प्रथममेव करोति यस्याः ॥ ताभ्यामजा—
- ६ यत सुतः सुतरां विवेकी यो बाल एव कलितः परलोकबुद्ध्या । सर्वापभोग-
सुभोगापि गृहे विरक्तः प्रव्रज्या सुगतशासनसम्युपे—
- ७ तं ॥ वेदानधोत्य सकलान् कृतशालचिन्तः श्रीमत्किन्त्सुपगम्य सहाविहा-
रं । प्राप्नो य एवमथ सुप्रशसप्रशस्तं (स्यां) सर्वज्ञशान्तिमनुगम्य
- ८ तपश्चचार ॥ मेयं विशुद्धगुणसम्भूतभूरिकोर्तिः शिष्योनुरूपगुणशैलशोभि-
रामः । बालेन्दुवत्कलिकलङ्कविमुक्तकान्तिर्वन्द्यः

- ९ सदा मुनिजनैरपि वीरदेवः ॥ वज्रासनं वन्दितुमेकदाथ श्रीसम्भवाबोधिमुपा-
गतोसौ । इष्टं तथागत्यहदेशिभिन्नं श्रीमद्यशेवर्म—
- १० पुरं विचारं ॥ तिष्ठन्नयं ह सुचिरं प्रतिपत्तिवारः श्रीदेवपालभुवनाधिपलब्ध-
पूजः । प्राप्तप्रभः प्रतिदिनादयपूरिताङ्गः पूषेवदारित—
- ११ तमः प्रसरो रराज ॥ भिलोरात्मममः सुहृद्भुज इव श्रीसत्यबोधेर्निजो नालन्दा-
परिपालनाय नियतः मङ्गुस्थितौ यः स्थितः । यन्नोतौ स्फु—
- १२ टमिन्द्रशैलमुकुट श्रीचेत्यचूडामणी श्रीपुण्यव्रतसम्बृतेन जगतः श्रेयोऽर्थमुत्थापिनी ॥
नालन्दया च परिपालितयेह सत्या श्रीम—
- १३ द्विहारपरिहारविभृतिताङ्गा । उद्भाषितोपि बज्रकीर्तिवधूपतिले यः साधुसाधुरिति
साधुजनैः प्रशस्तः । चिन्ताञ्जरं श्रमयतार्त्तजन—
- १४ स्य दृष्ट्या ध्वन्नरेरपि ह्रियेन हतः प्रभावः । यथेप्सितार्थपरिपूर्णमनारथे-
न लोकैर्न कल्पतस्तुल्यतया गृहीतः ॥ तेनैतद्—
- १५ च हतमात्ममनोवदुर्ध्वैर्वासानस्य भवनं भुवनोत्तमस्य । संजायते यदभिबीक्ष्य
विमानगानां कैलासमन्दरमहीधरशृङ्गशङ्का ॥ सर्व्व—
- १६ सोपनयेन सत्त्वमुहृदासौदार्यमभ्यस्यता सम्बोधौ विहितस्पृहं सहगुणैर्विस्पर्द्धि-
वीर्य्यं तथा । अत्रस्तेन निजानिजा विह्वलहत पुण्याधिकारे
- १७ स्थिते येन स्तेन यशोध्वजेन घटितौ बह्वश्वुदीचीपथे ॥ सोपानमार्गमिव
मुक्तिपरस्य कोत्तिमेतां विधाय कुशलं यदुपात्तमस्मात् ।
- १८ कृत्वादितः सपितरं गुरुवर्गमस्य सम्बोधिमेतु जनराशिरशेष एव ॥ यावत्कूमा-
जलधिवलयां भूतधात्रीं विभर्त्ति ध्वान्ध्वंसी
- १९ तपति तपनो यावद्वेवाग्ररश्मिः । स्निग्धालोकाः शिशिरसहसा यामवत्यश्च याव-
न्नावत्कीर्त्तिर्जयतु भुवने वीरदेवस्य शुभा ॥

TRANSLATION.

“ From—Success to the auspicious sage Muṇidra (= Buddha) whose mind, bent on the welfare of mankind, has mastered the principles of morality, who is the only bridge for the oppressed to cross the ocean of worldly trouble, infested by the frightful crocodile of sin. Women, who are our sovereigns, cannot, even when they are all united together, reduce his mind: what disgrace is there then, if unaided, I am powerless to overcome the Lord of the Three Regions? So thought the mind-born Cupid and flew away to a distance from him. May that auspicious Vajrasana preserve the illimitable universe in the path of Buddhism! There exists an excellent country—the ornament of the regions of the north, and renowned as Nagarāhara. There lived a courtier by name Indragupta, twice born by race [Dvija] and descended from a very noble family. Spotless like Indra, he flourished, with his accomplished Rānī, the mistress of his household, whose name is reckoned the first, when people recount the virtues of faithful wives.

"A son was born unto them, who from his birth thought of the future world and who was necessarily dispassionate. He was dissatisfied with all the pleasures of home, and longed to attain the ordinance of Sugata by retirement.

"Having studied all the Vedas and reflected on the purport of the Sástras, he repaired to the great monastery of Kanishka,* and acquiring there a knowledge of the dispensation of the all-knowing (Sarvajña = Buddha), the theme of praise of all intelligent people, he performed a penance. This person of spotless merit and manifold virtues, distinguished by all the qualities of a worthy disciple, resplendently free from the stains of this Kali age, even as a young man, the lauded of all sages was VIRADEVA.

"Wishing on one occasion to offer his adoration to the adamant throne (vajrásana) of the great auspicious Bodhi he came to this place,† and subsequently, with a view to cultivate the acquaintance of the Bhikshus of the country, repaired to the Vāsanauvana vihāra.

"Abiding there for a long time, that person (Viradeva) who had made knowledge his only object, obtained the respect of the king of the country, DEVAPĀLA,‡ and flourished with daily increasing lustre, even as the sun, (Pushan) the dispeller of widespread gloom.

"He was as the soul of Bhikshus, beneficent even as one's own hand and the elect of Satyabodhi, he lived to promote the prosperity of *Nālandā* and the stability of the congregation (sangha). His virtues have made resplendent the *crown jewel of chaityas on the crest of the Indra-saila hill*, which promotes the welfare of creation by the dispensation of virtue, although addressed as the husband of many.

"Favoured for his meritorious deeds by the faithful and well-protected lady Nalandā, whose person was embellished with richly endowed *vihāras*, he was nevertheless praised as the pure and meritorious by all men.

"He, who curing by his look alone persons overwhelmed with the fever of destruction, cast into shade even the glory of Dhanwantari; he whom men, having obtained all the objects of their longing, looked upon as the all-granting Tree of Desire (Kalpa-taru), even he caused *this noble building* (to be erected), lofty as his mind, for the greatest object on earth, the adamant throne of Buddha; (vajrásana) a building which, when beheld by the travellers of the sky, leads to the impression of its being a peak of either *Kailāsa* on the *Mandara* hill.

"By him who had given away everything he had, and thereby became the most munificent among those who do good to mankind; who was the most

* See Cunningham's 'Ancient Geography,' p. 99.

† Ghosráwan.

‡ See Bábu Rájendrakāla Mitra's note on the Nalandā inscription in my account of those ruins, published by the Government of Bengal.

ardent in the knowledge of Buddha, most emulous in acquiring high merit, who was fearless alike amongst his own people and strangers in *this ever-progressing virtuous region*, has raised this flag of renown in honour of his maternal and paternal races in the northern regions.

"Whatever fruits may proceed from this act, which may be likened to a flight of steps to the mansion of liberation, may the same be conducive to the attainment of the divine knowledge of Buddha by mankind at large, foremost by his parents and ancestors!

"As long as the tortoise supports the ocean-girt receptacle of matter, as long as the darkness-dispelling sun sheds his fiery rays, as long as the mild luminary continues to sooth mankind and the night, so long may this bright act of Viradeva prosper in this world!"

Babu Rajendralāla Mitra remarks, that the date of the dedication is not given, but looking to the character, the well known Kutila, and the allusion of Deva Pāla of the Pāla dynasty of Bengal, the inscription probably belongs to the beginning of the 9th century. The dedicator was a recluse from the north-west frontier and bore the name of Viradeva. His native town was Nāgarahāra, once a famous seat of Buddhism, but now in ruins. His father, Indragupta, is described as a friend of the king (Rajasakha), that is, as I take it, a courtier; but he must have held high rank in court, as his wife is styled a Rānī, or Queen. Viradeva was of a religious turn of mind, and in early manhood retired from the busy world, to acquire a knowledge of the Buddhist faith in the Kanishka monastery, where he devoted a great portion of his life to study and penance, and to following the practice of his order. He started on his travels and came to the Nālandā monastery in Bihār, and afterwards dwelt for a time in the Vāsanāvāna vihāra, where he got himself noticed and respected by the king of the country, Deva Pāla.

Where the monastery was situated I cannot ascertain. It was probably somewhere near Manikyāla in the Panjāb or near his home.

II.—*The Ghosravān Inscription.*—*Transcript by* PROFESSOR RA'MKRISHNA GOPAL BHANDARKAR, OF BOMBAY.

ॐ श्रीमानसौ जयति सत्त्वहितप्रवृत्तसन्मानसाधिगततत्त्वनया मुनीन्द्रः । क्लेशात्मना दुरितनक्रदुरासदानाः संसारसागरमुत्त १

रणैकमेतुः ॥ अस्यास्मद्गुरो बभूवुर्वलाः संभूय हर्तुं मनः का लज्जा यदि केवलो न बलवानस्मि त्रिलोकप्रभे । इत्यालोचयते २

व मानसभवा यो दूरतो वर्जितः श्रीमान्विश्वमशेषमेतद्वताद्वाधौ सवञ्चासनः ॥ अख्युत्तरापथविभूषणभूतस्मिर्देशात्तमा न ३

गरहार इति प्रतीतः । तत्र द्विजातिरुदितोदितवंशजन्मा नाम्नेन्द्रगुप्त इति राजसखो बभूव ॥ २[?]जै[?]कथा द्विजवरः स गुणी मृ ४

द्विष्टा युक्तो रराज कलया मलया यथेन्द्रः । लोकः पतिव्रतकथा परिभावनासु सङ्कीर्तनं प्रथममेव करोति यस्याः ॥ ताभ्यामजा ५

यत सुतः सुतरां विवेकी यो बाल एव कलितः परलोकबुद्ध्या । सर्वोपभोगसुभगेऽपि
गृहे विरक्तः प्रव्रज्या सुगतशसनमभ्युपे ६

तुं ॥ वेदानधीत्य सकलान् कृतशस्त्रचित्तः श्रीमत्कनिष्कसुपगम्य महाविहारं । (five
letters illegible) मयम प्रशमप्रशस्य सर्वज्ञशान्तिमनुगम्य ७

तपस्वचार ॥ सोयं विशुद्धगुणभूतभूरिकीर्तिः शिष्योऽनुरूपगुणशील्यशोभिरामः ।
बालेन्दुवत्कलिकलङ्कविमुक्तकान्तिवन्द्यः ८

सदा मुनिजनैरपि वीरदं वः ॥ वज्रासनं वन्दितुमकदाऽथ श्रीमन्महाबोधिसुपागतोऽसौ ।
द्रष्टुं ततोऽगात्सुहृदेशिभिर्चून् श्रीमद्यशोवर्त्म ९

पुरं* विहारं ॥ तिष्ठन्नयं सुचिरं प्रतिपत्तिसारः श्रीदेवपालभुवनाधिपलब्धभूजः । प्राप्त-
प्रभः प्रतिदिनोदयपूरिताशः पूषेव दारित १०

तमः प्रसरो रराज ॥ भिक्षोरात्मममः सुहृद्भुज इव श्रीमत्यबोधे निजेनालन्दापरि-
पालनाय नियतः सङ्गस्थिते यः स्थितः । येनैतौ स्फु ११

तमिन्द्रशैलसुकुट श्रीचैत्यचूडामणी श्रीमण्यवतमम्वृतेन जगतः श्रेयार्थमुच्छापितौ ॥
नालन्दाया च परिपालितयेह सत्या श्रीम १२

द्विहारपरिहारविभूषिताङ्ग्या । उद्गामितोऽपि ऋकोर्तिवधूपतित्वे यः साधु साधुरिति
साधुजनैः प्रशस्तः ॥ चिन्ताज्वरं शमयताऽर्त्तजन १३

स्य दृष्ट्या धन्वन्तरेपि हि येन हतः प्रभावः । यद्येप्सितार्थपरिपूर्णमनोरथेन लोकेन
कल्पतरुतुल्यतया गृहीतः ॥ तेनैतद् १४

च कृतमात्ममनोवदुच्चैर्वज्रासनस्य भवनं भुवनोत्तमस्य । संजायते यदभिवोध्य विमान-
गानां कैलासमन्दरमहोदधरष्टशङ्का ॥ सर्व १५

खोपनयेन सत्वसुहृदामौदार्य[?] मभ्यस्यता सम्येधौ विहितस्पृहं सह गृणैर्विस्पर्द्धि-
वीर्य[?]न्तथा । अत्रस्थेन निजे निजाविह दृढत्युपाधिकारं १६

स्थितो येन स्वेन यशोध्वजेन घटितौ वंशवुदोचोपये ॥ सोपानमार्गमिव मुक्ति-
पुर[?]स्य कौर्त्तिमेतां विधाय कुशलं यदुपात्तमस्मात् [?] १७

कृत्वादितः सपितरं गुहवर्गमस्य सम्येधिसेतु जनराशिरशेष एव ॥ यावत्कूर्मा जलधि-
वलयां भूतधात्रीं विभक्तिं ध्वान्तध्वंसौ १८

तपति तपनो यावदेवोपरिष्मः । स्निग्धालोकाः शिशिरमहसा यामवत्यस्य यावत्तावत्को-
र्त्तिर्जयतु भुवने वीरदवस्य गृध्रा ॥ १९ ॥

TRANSLATION.

“Victorious is the glorious lord of Munis who, by his mind, operating for the good of all creatures, found out the system of truth and who is the only bridge for crossing the ocean of worldly existences; which [bridge] the crocodiles of sins, producing affliction, cannot approach. May he, the

* The Rev. Dr. J. Wenger who kindly undertook the laborious task of correcting the proofs of these inscriptions, remarks that the word *Vāsanaupana* does not occur in the text. The word actually used is *Jasvārmapūr*, *varma* being the title of a dynasty of kings. *Vāsanaupana* may of course be a synonym. The inscription appears to be metrical, but has not been printed as such. Strange to say, the Sanskrit is far purer than is usually found in inscriptions of the Pala kings.

glorious being, seated on the seat of adamant (vajrāsana) under the Bodhi tree, protect the whole universe,—he, whom the fancy-born (god of love) shunned from a distance, as if reflecting that there was no shame in it, if he single-handed were powerless to attract the mind of the lord of the three worlds, when his superiors who had gathered together, proved unable to do so. There is a country known as Nagarahara, the land of which is the ornament of Uttarāpatha (Northern India). There was a Brāhman there of the name of Indragupta, the friend of the king, who was born in a family that had risen high. The meritorious and excellent Brāhman shone like the moon with his spotless digits, united to a wife,—[one word illegible] a wife of whom mention is first made by people in going over the stories of faithful wives. From them was born a son who was exceedingly thoughtful, and whose mind even in childhood was filled with thoughts of the next world, and even in his house, rich in all the means of enjoyment, he remained unconcerned [took to no pleasure], in order, by the renunciation of the world, to adopt the system of Sugata. Having studied all the vedas and reflected on the śāstras, he went to the viḥāra of Kanishka, and following him who was praiseworthy on account of his severity, and who was all-knowing and free from passions [two or three words illegible], he practised penance. The pupil of one who, by his pure virtues, had obtained great fame, he, Viradeva—graceful by the possession of befitting virtues, character and fame, and with a lustre free from the stains of Kālī, was like the new moon, an object of adoration even to the munis. He once came to the great Bodhi to pay his respects to the vajrāsana (adamantine seat), and thence went to see the mendicant priests of his country to the Yasovarmanapura Viḥāra. While staying here for a long time, respected by all and patronized by the king Devapāla, he, having obtained* splendour [of knowledge or power], outfilling by his every-day rise all the quarters, and dispelling darkness, shone like the sun. Appointed to protect (govern) Nālandā, he, the friend of the Bhikṣu, as if he were his arm, abided by his true knowledge concerning the church† (or congregation—*saṅgha*), and having already taken the vow of a Śramana, erected, for the good of the world, *two crest-jewels in the shape of chaityas*, on the crown (summit) of Indra-saila. Though shining bright by means of Nālandā‡, who having been protected by him, had her body adorned with a splendid row of viḥāras, he was praised by good people saying, “Well done, well done,” when he became the husband of the wife Great Fame. Dispelling the fever of

* The three epithets here have a double meaning, one applicable to the sun and the other to Viradeva.

† That it is of great importance to have a united church and to construct *viḥāras* for congregational purposes.

‡ Compared to a wife.

anxiety of afflicted persons by a mere look, he put to shame the might of Dhanvantari* and was regarded as equal to a Kalpa-taru† by people whose desires he had fulfilled by granting to them all objects wished for. By him was erected this house for the best thing in the world, the adamantine seat (vajrasana), as lofty as his own mind, which the movers in aerial cars mistake for a peak of Kailâsa or Mandâra, when they look at it. With his desires fixed on enlightenment (or true knowledge—*sambodhi*) and with a heroism rivalling his other qualities, he, practising liberality to the friends of all creatures by giving his all, and exercising his holy authority here, hoisted the banner of his fame on the two poles of his family‡ (family of father and mother) in Uttarâpatha. Since in the shape of his famous deeds he erected a staircase to ascend the place of final emancipation and obtained religious merit, may all people without exception, headed by his father and all the elder ones, attain to real knowledge§ (*sambodhi*)! May the bright fame of Virâḍ-va last in the world as long as the tortoise bears the earth begirt with the seas, as long as the sun with his warm rays, the destroyer of darkness, shines, and as long as the cool-beamed moon renders the nights bright!"

In the middle of the east wall of the vihâra I found a very beautiful figure three parts concealed in the ruins. It is now in my collection at Bihâr, and I extract the description of it from my catalogue:—"No. XVI. A magnificent alto-relievo figure in black basalt, eight feet high, probably of Vajrasattva Buddha [Schlagintweit, p. 53]. The feet rest on a lotus pedestal, and there is no throne underneath. The hair rises from the forehead, and is twisted into a pyramidical cone which is nearly a foot in height. In its midst a Buddha is seated in the state of contemplation. A jewelled frontlet passes from behind the ear over the brow. The figure is four-armed, and each wrist is ornamented with an elaborately wrought bangle or bracelet. Other jewels adorn the feet, and the upper part of the arms, or rather the root of the four arms, for the second pair appear only to spring from the elbows. Above the head two winged figures support a jewelled crown with three points. The upper hand on the left side grasps a lotus stalk springing from the ground, while the lower holds a large bell, the rim and clapper of which are ornamented with a bead-work pattern. The palm of the hands on the right side are turned outwards and exhibit the mark of sovereignty. The upper one grasps a "malâ," or rosary. A ribbon, or scarf, three inches wide, passes over the left shoulder across the body. A cloth covered with a pattern of stars depends from a cord beneath the navel, and extends as

* Physician of the gods.

† A heavenly tree having the power of granting anything desired.

‡ The word 'vansu' means 'race or family' and 'a pole or bamboo,' and is here used in both the senses.

§ By means of his good deeds which serve as a staircase.

far as the knee. A jewelled girdle, with a large buckle, encircles the waist. There is a third eye in the centre of the forehead. On either side are two grotesque attendants. The one to the right is extremely corpulent, and is quite nude. It is in a kneeling position and grasps a lotus stalk, the flower of which is seen behind the upper right hand. The one to the left is clothed similarly to the main figure, and leans on a mace grasped in the left hand. The Buddhist creed is inscribed in the background and the donor's name below." On the north side of the vihāra I found another very perfect figure. I describe it in my catalogue as follows:—"No. IX. An alto-relievo figure of Buddha in black basalt, three feet three inches high. The figure is in the attitude of contemplation, and is clothed with a long robe depending from the left shoulder, and reaching the ankle. It rests on a lotus-leaf pedestal, supported by a lion-couchant on either side, and in the centre a female devotee is seen in the act of making an offering. The back of the throne is richly carved, and terminates in two points. It singularly resembles a gothic chair. A halo surrounds the head which is surmounted by a pipal tree. Above this is seen a couch on which Buddha lies in the state of nirvāṇa. The right hand is placed under the head which is supported by a pillow, and the left is parallel with the side. At either end of the couch is a kneeling devotee. Above the body, rises a "chaitya," and on either side of this are musical instruments. To the right of the main-figure is one of Māyādevi (the mother of Buddha), grasping with one hand a tree and resting on the other arm. Above this, is a figure of Buddha standing in the attitude of instruction. At the right side is a small elephant, and above this a seated Buddha in the attitude of instruction, a devotee kneeling at his feet. On the left side of the main figure, is a seated figure of Buddha with the 'fasting bowl' in his lap; above this, a standing figure of Buddha; and at the top a seated figure corresponding with that on the other side, except that the "Wheel of the Law" which is supported by a deer on either side, takes the place of the kneeling devotee."

One thousand three hundred and fifty feet to the south of the vihāra of Viradeva are the remains of another temple of considerable size. I discovered there a standing figure of Buddha six feet high, resembling in every particular the one described at the Singhabāni, except that there are no attendants, and a "chaitya" on each side of the head. A short distance to the south-west of the great temple is an image of Durgā, now worshipped as Mahisāsūrmardani. To the north-west is a temple containing a similar idol, now adored under the name of Asāji. To the west of the village lies a large tank, the Sét or Sāo-tālāb. Two miles north of Ghosrāwan once flourished a great sister monastery, the vihāra of Titrāwan, which I shall presently describe at length.

Four miles due east of the convent of Viradeva, and about nine miles from

Giryak, the traveller arrives at the sandy bed of a once mighty river, the Sakri. On the opposite shore there rises a solitary hill—steeper, but less lofty, than the isolated rock of Bihâr. Three sides of it are precipitous cliffs, the fourth a series of shelving rocks sloping away to the north. The summit is an even plateau four or five hundred feet square, literally covered with the remains of an enormous vihara, and of numerous stûpas and temples. Some of the piles of brick are thirty or forty feet high, and I found the remains of Buddhist idols in several parts of the hill. This rock is called Parabati, and a flourishing village of the same name lies at its foot. One mile east, or perhaps rather north-east of the "solitary hill," is situated the village of Apsar. Apsar is singularly rich in Buddhistic remains, and on its outskirts there is an enormous tumulus, seventy or eighty feet high. It appears to me to be the remains of a large temple attached to a vihara. I visited Apsar in September, 1871, and recovered four or five figures from it. They all of them merit detailed description. The most important of them is a colossal male figure, [a statue, properly so called,] about eight feet high, and four-armed. The head is surmounted by a richly jewelled crown, almost identical in shape with the regal cap of Barma and Siam, from underneath which long ringlets fall profusely over the shoulders. The sacred thread [*poita*] is noticeable on the body, in addition to the usual ornaments. In my opinion, the figure represents some prince or general—certainly not a Buddha, or any Hindû deity.

Another remarkable figure is a large, and exquisitely carved *linga*, bearing on either side a face life-sized. *The style of carving is precisely that of the other purely Buddhist idols*, and it was found close to the tumulus, near the site of the colossal boar for which Apsar is famous, and strange to say, close to the place where Major Kittoe discovered an Açoka inscription of great length and value, but which almost immediately afterwards was lost. During my stay in Bihâr, I made every effort to trace it, but without success, although I received every aid from my friend, Bâbû Binola Charan Bhattâchârjya, then Deputy Magistrate of Nowâda. Bâbû Binola Charan has succeeded me at Bihâr, and devotes much time and care to the preservation of my large collection of Buddhistic sculptures. Owing to his zeal in the matter (for which he deserves the thanks of all scientific men), there is now every prospect of the Bihâr Museum becoming a permanent local institution, and he tells me that it has become a sort of place of pilgrimage for all the country round; in fact, the descendants of Açoka's brâhmans at Râjagriha are beginning to look on it as a serious opposition, and to tremble lest it should cause a diminution in their income. I take this opportunity of publicly thanking my successor for all he has done in this matter. To return to Apsar. The Parabati rock, we must remember, is as nearly as possible thirteen miles south-east of Bihâr, and the ruins I have just described, shew it to

have been a place, which, in Buddhist times, was second only in importance to Nālandā, Rājagriha and Bihâr.

Travelling between three and four miles from Aphisar in a north-westerly direction, one arrives at the great mass of ruins which marks the site of the Titrawan monastery. Like the neighbouring monastery of Ghosrawan, Titrawan escaped the notice of Dr. Buchanan, and is barely mentioned by General Cunningham in his 'Ancient Geography of India.' A glance at the accompanying rough sketch map will shew at once the extent of these interesting remains, and will convince the archaeologist that they will repay a visit. We may here again return for a moment to Hwen Thsang. After leaving the Indra-saila peak, he is stated to have gone one hundred and sixty li to the north east to the monastery, known as *Kia-pou-le-kia-lan*, or the 'Kapotika [*i. e.*, pigeon] vihâra.' Both General Cunningham and M. Vivien de Saint Martin agree in thinking the reading incorrect, and in substituting sixty for one hundred and sixty. This must of necessity be done, as the distance given in the text would have brought the pilgrim almost close to the bank of the Ganges. *Sixty li would coincide approximately with the actual distance between Giryak and Bihâr, i. e., from ten to twelve miles.* Bihâr is strictly speaking north-east of Giryak, and the identification made by General Cunningham is undoubtedly correct. That Hwen Thsang should have omitted to visit Bihâr is extremely improbable; for we know of its existence nine centuries before, and its ruins at the present day vie in grandeur and extent with the remains of Rājagriha and Nalandā. The vihâra alluded to by Hwen Thsang appears to have been situated at Soh-Sarâi, a suburb of the city, distant less than a mile from the northern extremity of the "solitary hill." At Soh-Sarâi, I found several figures as well as a series of pillars thirteen feet in height [see Chapter VIII.]. I reserve, therefore, any further allusion to Bihâr, until I come to describe the city itself. After leaving Bihâr, Hwen Thsang proceeded to another monastery, forty *li*, or ten miles, to the south-east. The vihâra in question is described as standing *on an isolated hill*, and can be most satisfactorily identified with Parabati. Yet General Cunningham considers that the "bearing and distance point to the great ruined mound of Titrawan," although the ruins are situated in a plain, instead of on a hill, *and there is not the smallest elevation visible within a circuit of five miles.* I have no doubt that it was via Parabati and Aphisar, and *not* Titrawan, that Hwen Thsang quitted the confines of the kingdom of Magadha.

Approaching Titrawan from Parabati, one arrives at the Digî Pokhar, an enormous tank, running almost due north and south, measuring 2481 feet by 767. Four hundred and eighty-four feet from the south-east corner of the tank is a large mass of ruins, measuring 650 feet by 400. Towards the southern side of this are the foundations of a large brick building

exactly a hundred feet square and apparently once flanked with a tower at either corner, like the smaller temple recently partly uncovered at Nālandā. The modern village of Titrāwan is to the east of these ruins. Four hundred and forty-five feet to the south-east of the building above mentioned is a small temple, around which were grouped upwards of two hundred purely Buddhistic figures, many of them of exquisite beauty. I shall give a detailed description of them further on. Two hundred and thirty-eight feet to the south of the temple is another enormous tank, running due east and west and measuring 1160 feet by 780. The distance between the ruined vihāra and the side of the pond is 505 feet. The tank bears the name of the Śrī Bullum, or Bhairau-Pokhar. At a distance of 500 feet from the south-east corner, and facing immediately the great mass of the ruins, there is a luxuriant pipal tree under the shade of which is a colossal Buddha. The figure is placed in a brick platform, which has evidently been frequently repaired, and is supported by a small brick tower, or buttress, built behind the idol. In front a flight of steps descends to the shore of the lake. The image has been broken in two and again set up. It rests on two thrones, the lower of which is six feet six inches long, and is in three pieces joined together by iron clamps. It is divided into five compartments. In the outer one on either side there is a lion-couchant, and in the centre a lion-rampant. The two remaining ones are filled by the figures of devotees in the act of making an offering.

The throne is exactly one foot ten inches high. The second throne is in one piece, and is one foot two inches high and six feet long. It consists of a double row of fourteen lotus leaves;—the Buddhist creed being inscribed on ten leaves of the upper one—a word in each. The letters of this inscription are about an inch long. The figure is in the attitude of meditation, and the hair is knotted. The nose is very little damaged. I give its dimensions in detail.

	Feet. Inches.	
Top of the head to seat of upper throne,	7	
Round the head at forehead,	4	7
Across shoulders,	3	10
Across forehead,	1	2
Top of head to chin,	2	
Round the neck,	3	2
Across chest,	2	2
Shoulder to elbow,	2	
Elbow to wrist,	1	10
Length of hand,	1	
Hip to knee,	2	10
Knee to ankle,	3	1
Length of foot,	1	3

The body is covered with a cloak. The figure is highly venerated and has its *pûjâris* and rent-free assignment of land. It is worshipped under the names of *Sri Bullum* and *Bhairau*. On the east side of the tower behind it there are three niches; the first containing a figure of *Vishnu*, the second a miniature reproduction of *Sri Bullum* (except that three elephants take the place of the lion-rampant in the central compartment of the throne), and the third, a standing figure of *Buddha* with an elephant on one side and a *Bodhi-sattva* on the other. Four hundred feet to the west of the pipal tree, the bank of the tank runs to the north for a distance of some five hundred feet and then again turns to the west. In the angle of this piece of land I found the traces of a *stûpa* or *tope*, and a similar ruin is to be seen on the opposite side—exactly two hundred feet from the northern bank. The popular traditions of *Titrawan* are very poor. Any knowledge or recollection of Buddhism has entirely passed away, and the construction of the now ruined *vihara* is attributed to a demon king—*Ban Asar Raja*, who is also said to have consecrated the image of *Sri Bullum*. *Titrawan* must have been a monastery of no ordinary importance, and its position is even preferable to that of *Bargaon*. The country around it is well-watered and consequently fertile, and groves of trees surround it on all sides. From the towers of the monastery, the hills of *Giryak*, *Bihâr*, and *Pârabati* are distinctly visible, and the banks of the *Sri Bullum* tank are still covered at all times of the year with luxuriant verdure. This lake at sunset would even now charm every lover of the picturesque, and the effect must have been still more striking when thousands of recluses from the stately monastery which rose on its bank, left their meditations at evening time to adore and incense the colossal *Buddha* which they had erected in its northern shore and dedicated “to the greatest of all purposes.” I counted in one day at *Titrawan* two hundred figures of *Buddha* of all sizes and design; most of them bore the Buddhist creed in the characters of the 6th, 7th, 8th, and 9th centuries A. D., and they were nearly all mutilated. I rarely found a single figure which I can confidently assert to be purely *Hindû*. Several of the *Titrawan* idols were beautifully polished, and not a few of them bore inscriptions of interest. Besides the ruins at the side of the tank there are the remains of a large *stûpa* in the centre of the modern village, two hundred and eighty feet from the south-east corner of the *vihara*. The only *Hindû* figures I saw there were these of *Siva* and *Durgâ*, commonly called *Gauri Sankar*.

I now proceed to describe the Buddhist figures recovered by me from the *Titrawan* monastery, and now in my collection. No. [CCCXL.] A small figure one foot high, found in the mud at the banks of the *Digi Pokhar*. It represents *Buddha* in the state of *nirvâna*, reposing on a couch—one arm being under the head and the other resting on his side. The couch is supported by fantastically carved pillars. There are three attendants below; one has his head buried in his arms; the back of the second is turned to-

wards the spectator and he is apparently in the act of adoration, and the other is in the act of supplication. At each side of the body is a tree, and in the centre rises a circular stûpa on a square base terminating in a series of thirteen umbrellas. The Buddhist creed is inscribed on the face of the bed. [CXXLI.] The alto-relievo figure of a goddess two feet three inches high, not in any way mutilated—seated on a cushioned throne supported by lions at either corner. A cloth hangs down from the centre of the throne and bears an inscription. The figure is four-armed. The body is covered by a spangled garment which descends from a jewelled girdle below the navel. The usual ornaments are seen on the arms and neck, and a medallion is suspended by a chain from the latter. A scarf passes across the breast and shoulders. The upper hands grasp sprigs or bunches of flowers, and the lower hand to the left support a nude male infant on her knee. The opposite hand holds, what is apparently meant to represent, some sweetmeat or a cocoanut. The hair is elaborately ornamented. I take it to be the figure of Vasti, the goddess of fecundity, and I found an almost identical idol in the Bihâr fort. There is an inscription on the plinth, of which the following is a reading—

अनन्तदो ग्रामे मैविष्णु सुत उ[?] गोपतो चन्द्रकन पुष्ट्रि खरो? सैमहानिक

[two letters] य [?] लं [two letters.]

"In the village of Nentati by Gopaticandraka, the son of Sai Vishnu, and mistress or master, lord] of Pundra Sai Mahanika.*"

[CCCXLII.] Portion of a figure of Buddha, containing merely the head—the surrounding halo [within which is inscribed the Buddhist creed], and a small kneeling figure to the left, holding a scroll, over which is inscribed the word *Srî Magûlan*. [CCCXLIII.] Elaborate pedestal of a figure of Buddha in the attitude of meditation [broken off]. A double row of lotus leaves springing from a very beautifully sculptured stem, amongst which are the figures of five devotees. The base is covered by a long inscription of two lines, but I almost despair of getting it deciphered, on account of its indistinctness. [CCCLXIV.] Alto-relievo figure of Buddha in black basalt, and polished to resemble marble, two feet eight inches high. The body resembles precisely that of the great figure near the lake. The throne is divided into three compartments—the outer ones containing lions-rampant, and the middle one two devotees and a figure of Buddha in a state of repose under a canopy. The background consists of pillars, and dragons-rampant. The head is surrounded by an halo, which is surmounted by a pipal tree and the Buddhist creed. There is a seated Buddha on either side of the head. [CCCXLV.] An alto-relievo figure in black basalt, two feet ten inches high, seated on a throne, along the face of which there is an

* All the characters are nearly obliterated.

inscription. The face is nearly life size and the features hideous—the hair has been drawn like the feathers of a peacock's tail. A cobra's head peeps over the left shoulder. The earrings are circular, depressed in the centre and very large. There are two necklaces round the neck and two long flower garlands. A spangled cloth descends from the wrist to the ankles. The upper right hand grasps a sword and the left a trident [trisūl]. The objects in the lower hands I cannot distinguish—one being perhaps a gourd or pumpkin. The left foot is drawn up underneath the body, and the right rests on a lotus blossom below the seat of the throne. Babú Rám K. Bhandarkar reads the inscription : ८१२ जेव [illegible] सु [illegible] ह [one letter] सैजेनेन देवधर्मै,

"A gift to the gods by Sai Jena—Sambat 892—5th day—(i. e., A. D. 887.)

[VII] A very beautiful and perfect figure of Buddha in black basalt, three feet four inches high. The right hand rests on the knee, and the legs are crossed—the left hand being parallel to the left foot, which is marked with the sign of sovereignty. The body is supported by a cushion, and the hair is ruffled. A very beautiful halo covered with geometrical pattern surrounds the head, and above it rise three branches of the sacred pipal tree, each leaf of which is carved with extraordinary minuteness. Beneath the figure, a cloth depends from the throne, the sides of which gradually incline towards each other—disclosing at each corner a well-executed figure of a lion in the act of tearing to pieces the skull of a fallen elephant. There is an ornament in the neck and left arm, but apparently no drapery at all.—[XII] Figure of Buddha in black basalt, very well executed and identical with that described in the "Ruins of Nālandā Monastery," p. 12, except that the base consists of a group of devotees instead of the more common lion throne.—[LVIII.] Standing figure of Buddha, two feet six inches high. Plain back ground, without the usual ornamented border. The dress, etc., as in No. IV. The figure rests on a simple lotus leaf pedestal, and there is no throne at the base. On the right side there is an elephant and to the left an attendant in the same costume as the main figure and holding a mace in the right hand.—[LXXVI.] Curious alto-relievo carving, two feet eleven by two. At the base are small lotus-leaf thrones. On the two principal ones are seated crowned figures with a back ground of snake-hoods. Right and left of these principal figures are seated Nagās, with enormous tails turned upwards over their heads and the heads of the larger figures, and finally fantastically twisted into a knot between them. The portions of the stone above the figures, between them and the tails of the Nāgās, are covered with inscriptions. The peculiarity of the position of the writing renders the taking an impression more than ordinarily difficult, but it has been attempted both by Babú Rājendralāla Mitra and General Cunningham, and I hope soon to possess a transcript of it. It appears to contain the word Mahipāla, as on the gate of the temple of

Bāladitya at Nālandā. —[CXXVI] Remarkably perfect figure of Buddha, carved in the finest black basalt. There are no attendants, throne, &c. The stone around the head is of oval shape with a border. The hair is tufted, and the body is covered by a cloak which falls over the left shoulder. The body rests on a cushion encircled by a carved border. The reverse of the carving is almost covered with the drawing of an enormous votive chaitya surmounted by a series of umbrellas. This I think is almost unique and is undoubtedly worthy of notice. It may possibly be the representation of a chaitya at Titrāwan. —[CXXIV]. Curious figured Buddha, two feet four inches high—seated in European fashion on a throne, the hair in tufts, as on the Indra-Saila peak, an attendant on either side of the feet, and a seated Buddha at each side of the head. —[CLXII]. A slab of black basalt, two feet high, covered with a rude carving, intended to represent Buddha in the state of nirvāṇa under the sacred Bodhi tree. —[CCXXVIII]. A magnificent figure of Māyādevī in very fine black basalt, four feet three inches high. The pedestal is composed of scroll work of the most elaborate description. The hair is not turned up in a conical point as in the other figures, but is dressed in an enormous chignon which falls to the right. The busts are large, and the figure leans gracefully to the left. The various ornaments are of the most elaborate description. Five Buddhas surround the head. On either side are richly dressed attendants armed, and leaning in the same position as the main figure; the one to the left has a background of flames. The plinth is covered by an inscription, as follows;

देयधर्माय पद्मभट्टारक[होपासक?] भट्ट नाह्य सुत भट्ट दच्छस्य यदत्र पुण्यं
मद्भवतु मातृपितृपूर्वकं सकलसत्त्वानुग्रहे य ? नृव ? राज श्रीरामपतिदेव सम्मत् वैशाख-
[श्राव] दिने २८ चिन्तासुत (about six letters illegible).

“This is a gift to gods, by the pious devotee Bhaṭṭa Ichchha, the son of Bhaṭṭa Naho. May the merit abiding in this, contribute to the welfare of all beings with his father and mother at the head! The second year of the king Sri Ramapati Deva; 28th day of Vaisākha.”

The characters in this inscription look comparatively modern.

No. IV. Fine standing figure of Buddha in black basalt, five feet eight inches. The pedestal is divided into five compartments, and is decorated only by a simple moulding. A devotee is kneeling at the right hand corner. The feet of the statue rest on a double row of lotus leaves. The figure is draped in a long cloak reaching to the knees, and a second garment beneath it extends to just above the ankles. On either side is an attendant, the one to the left holding an umbrella, the other (a curious three-faced figure) grasping a lighted torch in one hand, and a water-pot in the other. On either side of the head there are small seated figures of Buddha. Behind the figure, is a very exquisitely carved moulding resting on two

pillars which culminate in tulip-shaped capitals. There is a bead-like halo round the head, and a similar border encircles the stone itself. This figure came from the centre of the brick building, and always bore the name of the *Telia Dhubé* (an evil spirit?)

A mile to the west of the Digí pond at Titráwan is another village—scarcely less picturesquely situated—called Haragawan or Hargáon [*Vihāragrām*?]. Here there is a large mound at the west bend of a dried-up tank. Several pieces of carving were lying about it, when I first visited it in September, and I commenced an excavation there. I uncovered a series of cells running north and south, each being twelve feet long by four or five broad, and the partition walls being of great thickness. In the first cell to the south, I found a splendid figure of Buddha, and I hope one day to completely uncover the mound. The Buddha I allude to, is No. XXVI, in my museum. It is carved in black basalt of a quality equal to marble. The body rests on a pedestal of lotus flowers, beneath which is a throne divided into seven compartments. These are again sub-divided by a line in the centre. The lower ones consist merely of brackets, mouldings, and cornices, and the upper ones are filled with figures. At the right is a female devotee; then a lion; next a grotesque figure (full face) supporting the moulding above, and in the centre the Wheel of the Law with a deer on either side. On the left side, in the place of the female figure, are two chaityas, with a small figure above. The signification of this is mysterious. As regards the dress, a simple sheet extends from the waist to the ankles, and its folds are gathered up in festoons beneath the legs. The head is covered by a conical crown, and the jewels on the body are very elaborate. To the right of the figure is a small image of Māyādevī, and above this a Buddha—standing and wearing a conical crown. There is a similar figure on the opposite side, and below it is a Buddha holding the Bhikshū's bowl. The necklace is very beautiful, and there is a lotus blossom behind each ear.

VIII.—Pawa'pu'ri' and Biha'r [“The Isolated Rock”].

We must next visit one of the greatest places of Jaina pilgrimage—Pawápuri, situated about three miles to the west of Hargáon and Titráwan, near the dried-up course of the Panchina, and as nearly as possible due south of the “solitary hill” of Bihār. Pawápuri is, strange to say, singularly destitute of archaeological interest. The great temple of Mahavira is a modern construction,—a glaring mass of brick and plaster, totally void of any beauty or architectural merit. Its lodging-houses, garden, “nauratan” summer-house, &c., all date within the past thirty years, and look as if the workmen had only left them yesterday. To the south of the village, and near the shores of the famous Pawapuri tank, I detected the remains of a tumulus, but its materials have been ruthlessly used up in the construction of

a great circular platform, which you are gravely assured to have been the actual scene of the preaching and teaching of the famous Jaina Tirthankara himself. In the village I found a few Buddhist idols which probably came from this place. Opposite the "chabútra," or "pulpit," of Mahāvira is an enormous tank, covered with the lotus flower and other luxuriant water plants, and in which myriads of fish swim undisturbed by the apprehension of inimical net or hook; for their preservation seems to be the only care of the pujári and his assistants. In the centre of the pond is a second temple still less attractive than the first, built in the centre of a stone platform, which is connected with the shore by a narrow stone causeway five hundred and fifty feet long. This temple is resorted to by pilgrims from all parts of India, and is the scene of a great melá in the month of Kártika. Many of the visitors are the inhabitants of native states, subjects of Sindhia and Holkar, and it must be a dreadful undertaking for them to pass through the tract of country south of the rail before the autumn sun has dried up the floods, which make the once famous Bihār almost inaccessible during the rainy season. A good road from Bakhtiarpur to Bihār would be of infinite service to the country, and its completion is worthy of the attention of Government. Without it, the lakhs of rupees which have been spent on the roads from Giryak to Rájauli and from Giryak to Munger, have been simply wasted.

Six miles north of the birth-place of Mahāvira Swámi is situated Bihār,—once a famous seat of Buddhistic lore and at the same time doubtless the capital of a Hindú or Buddhist prince;—later still, the metropolis of one of the richest and most powerful of Muhammadan states—and now the decayed and ruined chief station of the subdivision of Zila' Patna which bears its name. To the west of the town runs the Panchána, now represented merely by a sandy hollow, winding round the foot of the solitary hill to the north-west of the town. From the main stream no less than five rivulets branched off to the east, intersecting the town in different places, and adding not a little to the picturesqueness of its appearance. All of these have long since dried up, and with its river seems to have ended the prosperity of Bihar.

For years a great sand-bank has been silting up in the bed of the stream just below Pawápuri; which forces all the water into the *pyques* to the east, and renders the country to the south an arid waste. Even at the height of the rains, the most feeble stream with difficulty forces its way along the deserted bed, and at all other times of the year not a particle of water is visible. To the north-east of the town is the hill, appropriately described more than fifteen hundred years ago as an "isolated rock." The southern slope is gradual, a staircase of boulders piled one upon the other, more like the work of some architect of the past, the effect of volcanic agency. The other side is a cliff, the side of which is varied by enormous rocks, some perpendicular and boldly darting into the air, others lying in heterogeneous

piles at the foot of the precipice. Seen in the glare of the midday sun the Bihār hill would fail to impress the traveller, but when the shades of evening fall upon it, and darkness begins to gather around its caves and rocks, it would be difficult to describe its beauty. Before leaving the solitary hill, or speaking of its ruins, we must again seek for aid in the pages of Fah-Hiyan. I follow the text of Mr. Beal's translation, page 110, chapter 28. "From this city [Patna] proceeding in a south-easterly direction nine yojanas, we arrive at a *small rocky hill standing by itself*, on the top of which is a stone cell facing the south. On the occasion, when Buddha was sitting in the middle of this cell, the divine Sekra took with him his attendant musicians, each one provided with a five-stringed lute, and caused them to sound a strain in the place where Buddha was seated. Then the divine Sekra proposed forty-two questions to Buddha, writing each one of them singly with his finger upon a stone. The traces of these questions yet exist. There is also a Saṅghārāma built upon this spot. Going *south-west from this one yōjana we arrive at the village of Nā-lo.*"

This hill is identified by General Cunningham with Giryak. "The remains of Giryak," he writes, "appear to me to *correspond exactly* with the accounts given by Fah-Hiyan of the Hill of the Isolated Rock." His reasons are twofold, 1st, the position, and 2nd, the supposed etymology of Giryak, *i. e.*, giri-eka *ek giri*. I have already given several reasons for my differing with General Cunningham as to this identification, and I now proceed to adduce others.

Firstly, at Giryak *there is no solitary hill at all*, nor any hill which can be described as resembling in any way an eminence of that description. At Giryak terminates the rocky range of the Rājgir hills, which stretch from the neighbourhood of Gayá to the banks of the Panchāna, on which the village of Giryak stands, and, as a matter of fact, the hill which rises above the village—so far from being solitary—is a mere offshoot of Vipulagiri at Rājgir, and is not less than six miles in length.

Secondly, from the "solitary hill" Fah-Hiyan proceeded south-west, one yojana, to Nāla. Now Nāla has been identified most satisfactorily with Bargāon* by position and by the aid of inscriptions, but strange to say, Bargāon is exactly six miles north-west of Giryak. If General Cunningham's identification of Giryak be right, Nālandā must have been situated somewhere to the *south* of the Rājagriha hills, in the middle of the Nowadā valley, but he identifies it with Bargāon which is exactly *north-west* of the Rājagriha hills, in the centre of the Bihār valley. For this reason it is clear that "the hill of the solitary rock" could not be Giryak. The two identifications involve a dilemma, because no amount of argument can make Bargāon six miles south-west of Giryak, when actually

* 'Ancient Geography,' p. 469.

it is six miles in the very opposite direction. The identification of Nálándá with Bargáon (Vibáragráma) is undoubtedly right, and as a consequence, that of the "solitary hill" with Giryak—undoubtedly wrong. General Cunningham writes as one reason for identifying Nálándá with Bargáon—"Fah-Hiyan places the hamlet of Ná-lo at one yojana, or seven miles, from the hill of the isolated rock, *i. e.*, from Giryak, and also the same distance from New Rájagriha. *This account agrees exactly with the position of Bargáon with respect to Giryak and Rájgir.*" Now in reality both translators agree in placing Nálándá to the *south-west* of the hill, and as a matter of fact Bargáon is *north-west* of Giryak.

General Cunningham must, therefore, rely on two arguments, 1st, the supposed etymology of Giryak, *i. e.* ek giri = one (= a solitary ?) hill; 2nd, the coincidence of the fable of the forty-two questions. As regards the first, it is entirely opposed to all principles of etymology, and I feel sure no instance of a similar inversion of the numeral can be found throughout the whole range of Indian names. It must be of course admitted that Fah-Hiyan relates a certain incredible story about *his* "solitary-hill," which Hwen Thsang reproduces two centuries later in connection with *his* Indra-Saila peak, but the supposed event must be allowed to have happened, or rather to have been alleged to have happened, at least a thousand years before the visit of even the earlier pilgrim, and it is by no means improbable that the recluses of the one vibhára contended with those of the other for the possession of the actual site of so remarkable an event in the career of their great teacher. Scarcely two centuries have passed away since Oliver Cromwell was gathered to his fathers, yet three museums at least lay claim to the exclusive ownership of his scull, while no less than half a dozen cities vie with each other for the honour, of being the birth-place of Dante, of Chaucer, and of Christopher Columbus. An accidental coincidence as to the locality, made the scene of a mythical fable, can scarcely be sufficient, to convert the end of a rugged chain of mountains into a "small isolated rock, standing by itself,"—especially when such an identification is diametrically opposed to given directions and distances, and to distinct nomenclature.

I have no hesitation in identifying the "solitary hill" with that rocky peak at Bihár, which rises by itself in the midst of the plain covered with rice and poppy fields, and which gently slopes from the northern foot of the Rájgir hills to the banks of the Ganges itself. My reasons for so doing are: first,—correspondence of the relative distance and position of the Bihár rock and Patna, and of the solitary hill and Pataliputra; second,—the agreement of the relative distance and position of the Bihár rock and Bargáon, and the "solitary hill" and Nálándá; third,—natural appearances of the hill itself.

Some great Buddhistic fame once stood on the top of the Bihár rock. The dargáh of Malik Bayú Ibráhim, which now surmounts it, is

composed almost entirely of the materials of a Buddhist temple, and chaityas and portions of gateways, &c., have been found by me, both on its summit and at its base, and the traditions of the people still make it the site of a famous "Maghaia" [Buddhist?] Saṅghat [monastery?]. Passing slowly one day towards the northern peak of the hill, I found a remarkable figure between the crevices of the rock. It is unique as far as my collection is concerned, and bears a dated inscription. I extract a description of the figure from my catalogue, No. CCXVIII. Buddha is represented seated on a lotus pedestal in the attitude of instruction, the five compartments of the throne which support the figure are filled by the representations of six devotees and two Nāgas who appear to be listening to his discourse. On either side of the principal figure, two other Buddhas are seated in European fashion. Close to the head of the main figure are small Buddhas, and on either side of the two seated Buddhas, two other Buddhas standing. To the right and left are groups of Buddhas similar to the main one, and above this, supported by four attendants, is a Buddha in the state of 'nirvāṇa,' and above this, there is a fourth group of three Buddhas seated in the same attitude as in the main group. The figure is two feet nine inches high, and bears an inscription on the plinth of which the following is Bābū Rājendralāla's transcript.

1st line. महाराजा * * महारक श्रीमन्मदन * * देव प्रवर्द्धमान

2nd line. जैनराज — सम्ब * वैसाखदिने २४.

3rd line. * * * धर्माय दान पवत्रिके (यं)

4th line. मरण स्वीक सःसयिकस्य ॥

"On the 24th of Vaisākha in the samvat — (?) of the Jaina king, the great king, the worshipful Śrī Madana (Pāla) Deva reigning. This deed of religious gift of — Sāmāyika."

This inscription is doubtless of considerable historical importance, and may well give occasion to various surmises to the religion of king Madana Pāla Deva, who is here spoken of as *Jaina*. May not he and his ancestors have been Buddhists?

The view from the solitary rock is most striking, especially during the rainy season, when the streams once more begin to flow in their deserted beds. During this time of the year, a series of melās, or gatherings, take place, which are very greatly resorted to both by Muhammadans and Hindūs. The view is bounded on the south by the rugged hills of the Rājgir chain, which stretch far away to the west, further than the eye can reach, and which, still covered with trees and flowering shrubs as of old, seem in the evening light to possess a purple hue as rich as that of the Apennines at home. To the east one catches, amidst luxuriant groves of trees, occasional glimpses of the ancient mosques and the still more ancient fort of Bihār, and beyond it stretches an even plain of rice and poppy lands till the gaze is arrested by the bold outline of the Shaikhpūra hills in Munger. The prospect to the north is

precisely similar, a plain broken only by groves and tanks, through which the Panchāna once poured its water into the Ganges, and which is bounded only by the banks of the sacred stream.

The Bihār fort lies nearly a mile east of the foot of the hill, and it was between the fort and the hill, and along the banks of the Panchāna river that the old Hindu city flourished. The shape of the fort is an irregular pentagon, and its sides were composed of large masses of grey stone, quarried, of course, from the neighbouring hill. The ground on which the fort stands is a natural plateau raised considerably above the level of the surrounding country. The wall appears to have been eighteen or twenty feet thick, and twenty-five or thirty feet in height, and its circumference measures eight thousand five hundred feet. The distance from the north to the south gate is two thousand eight hundred feet, and from the east to the west two thousand one hundred feet. There are traces of enormous buildings of brick in the centre, but of these I shall speak hereafter. There appear to have been few bastions projecting from the side; but the north gate, which is still tolerably perfect, was flanked by towers. The remains existing within the fort may be divided into three classes;—1st. The ruin of a smaller Muhammadan brick fort and houses belonging to the same period. 2nd. Those of Hindú buildings and temples. 3rd. Those of the great vihāra, or college, of Buddhistic learning. As far as this book is concerned, I shall speak alone of the latter. Nearly all the centre of the fort, on either side of the road which crosses it, is taken up by brick quarries. The proprietor of these pays Rs. 40 a month to the zamindar, or owner of the freehold, of the fort for the exclusive right of excavating it, within certain limits, for bricks and brick-dust, the supply of which commodities seems quite inexhaustible. The workmen light daily, at a depth of from fifteen to twenty-five feet from the surface, on the entire foundations of buildings, composed of bricks of precisely the same shape and size, as those found at Nālandā and Rājagriha. The larger ones sell now-a-days for as much as two pice a-piece. In the midst of this mass of rubbish, Buddhistic carvings are daily turned up. I have seen as many as four chaityas dug out in half an hour. The carvings found here are chiefly chaityas, votive tablets, and mouldings containing figures of Buddha in different positions. These chaityas are of all shapes, round, circular, square, and twelve-sided, and contain mostly the usual typical figures of Buddha. They differ greatly in design and some of them are very beautiful. A group of them appear in one of the photographs of my collection. They were probably all surmounted by umbrellas, or rather by series of umbrellas, which are generally broken off, and were in many instances carved in separate pieces of stone. The tablets alluded to vary from one foot to three feet in height, and generally contain one or more figures of Buddha under a canopy, and often bear the Buddhist creed. The cornices contain

long rows of Buddhist figures, seated under canopies in different positions with a moulding a little above and below. These latter are most graceful in design. I have several specimens perfectly unmutilated. The Buddhist creed is often engraved on the upper or lower moulding. It would be very uninteresting to attempt a description of all the carvings found in the fort, so I propose to mention merely the most remarkable. 1st. A figure of Padma-páni or Surya, in a very peculiar kind of white stone or marble, which bears *all the appearance of having been calcined by fire*. It is three feet seven inches high. The feet rest on a throne divided into seven compartments, in each of which there is the figure of a galloping horse. The head is surmounted by a conical jewelled crown, from beneath which the hair falls profusely on the shoulders in ringlets. Either hand grasps a lotus. The figure is ornamented with an elaborate girdle and necklace; a sword is girded on the left side and the dhúti is twisted very closely around the legs, and finally disappears into a pair of boots. An attendant stands on either side, and a small figure at each corner is seen in the act of discharging an arrow from a bow.—[LII]. Alto-relievo figure of Buddha seated in the attitude of contemplation, two feet six inches high, covered by an elaborate canopy, supported by pillars. The background within the arch consists of pilasters, dragons, and chaityas. Above the arch, and surrounded by scroll work, is a row of five niches, each containing a Buddha.—[LIII]. A very fine and unmutilated figure of Buddha, one foot eight inches high. An attendant is standing on either side and above their heads is a chaitya. The figure is surmounted by a pipal tree.—[LVI]. Upper portion of the canopy of a figure of Buddha, exquisitely carved. The niches in it are surrounded by the peculiar ribbed pattern which appears so prominently in the ornamental brick work of the great Nalandá temple.—[LVII]. A semi-circular slab of basalt containing thirty-three figures of Buddha seated in three rows, and in different positions, and precisely similar to those found at Nalandá. They evidently once formed portions of a complete circle of similar figures, and still bear marks of the metal clamps which joined them together. They evidently formed portions of a dedicatory tope.—The next piece of carving I have chosen for illustration is a portion of the canopy of a figure. The design is singularly graceful, and I regret the portions of it are too small and broken to admit of being joined together. Another remarkable piece of sculpture is a figure of Buddha under a canopy two feet two inches high, resting on a pedestal of lotus flowers supported by scroll work. The pillars have less decoration than usual, and there are no niches above the canopy. On either side of the principal figure there is a Buddha, seated in European fashion on a stool or chair, and on either side of the head is a small Buddha, cross-legged in the attitude of contemplation. There is a similar figure at the top of each figure. The chief portions of cornice found contain small

figures of Buddha under pillared canopies, but some are of different design, *e. g.*, one piece is divided into compartments by curious short pillars, with a ribbed pattern in the centre. The compartments thus formed contain alternately a lion-couchant and a richly caparisoned elephant. Another slab, seven feet long, contains grotesque dancing figures surmounted by plain mouldings. This piece is particularly worthy of note; for the costume depicted is almost identical with that worn by the jesters of the Middle Ages of European history. The next carving worthy of note is a figure of Padmapáni under a canopy, one foot four inches high. On either side of the central canopy were two carved panels. One is broken off, but the other exhibits a fine piece of scroll work springing from the hands of a grotesque figure. A seated figure of Mâyádevi, one foot seven inches high, seated on a pedestal of lotus leaves. The legs are crossed, and the sides of both feet are turned outwards, and exhibit the royal signs. The hands rest on the knees, the left grasping a lotus stalk; the earrings are circular and the ornaments (especially the *batís*) are very large. A spangled dhúti descends from a jewelled girdle to the feet. There are small female attendants on either side; the one to the right being four-armed. Portion of the background of a figure of Buddha. A pillar and part of an arch covered with the most minute and exquisite ornamentalia. Inside it a dragon and rider are seen in the act of destroying an elephant. Another specimen of the same sort of carving differing in detail and design from the last. As regards the square tablets containing figures of Buddha, they have been generally described at the bases of pillars, but I believe this to be wholly erroneous; for I found piles of them in front of the Nálándá temple, and they are met with in great number in the Bihár fort. I believe them to have been purely votive, serving exactly the same purpose and end as the chaitya. These are of inconsiderable thickness, generally oblong, sometimes rounded at the top. They vary from one foot to two or three feet in height, and are of proportionate breadth. Besides these Buddhistic sculptures I found very few Hindú figures, the only one of them worthy of description being that of a bull, most artistically executed, and wearing a string of bells round the neck.

About one hundred feet inside the great northern gate of the fort once lay a broken monolith, about fourteen feet high, and oval in shape. General Cunningham gives an account of it [*vide* Report of Archaeological Tour of 1861-62.]

Bábú Rájendralála Mitra writes of it as follows;—*

“One mile due east† from the dargáh, and about a hundred yards inside the northern gate of the old fort of Bihár, there lies a sandstone pillar, which bears two separate inscriptions of the Gupta dynasty. Unfortu-

* Journal, Asiatic Society of Bengal, XXXV, p. 270.

† This is a mistake. The pillar was due north of the dargáh.

nately the surface of the stone has peeled off considerably, so that both the inscriptions are incomplete. The upper inscription, which is of Kumāra Gupta, has lost both ends of every line, being probably about one-third of the whole. The lower inscription has lost only the left upper corner, and some unknown amount at the bottom, where the pillar is broken off. But as the remaining portion of the upper part is letter for letter the same as the opening of the Bhitari pillar inscription, nearly the whole of the missing part of the left upper corner can be restored at once. This record belongs to Skanda Gupta, the son and successor of Kumāra Gupta.

"In the plate the upper inscription is numbered 1 and the lower one 2. The former extends to 13 lines, and bears the name of Kumāra Gupta, whose eulogium it is perhaps intended to be. I say "perhaps" deliberately, for a large portion at the beginning of every line being lost, and it being impossible to give a connected translation, I cannot be certain that the record did not contain some other name which has now been lost. In the fourth line the word *Kārya*, or "funeral cake," may refer to Kumāra Gupta, whose name occurs in the 3rd line, and the record may consequently belong to Skanda Gupta, but in the absence of connecting words such a supposition cannot be justifiable. The document is most probably in verse, and the word Chandra in the first line suggests the idea that the Kumāra Gupta of the record was the son of Chandra Gupta II. of the Kuan Pillar. The figure for the year in the last line is perfectly clear, and is indicated, as usual in Gupta records, by three parallel lines, but the letters before and after it are very doubtful, and no reliance can be placed on the date. The letter preceding the 3 may be a 60, and some of the letters after the letter for S'aka may be figures, but I am not certain of their value. As Kumāra was the sixth in a direct line from S'ri Gupta, the founder of the Gupta dynasty, it is certain that the date, whether 3 or 63, cannot be of the Gupta era; for according to the Udayagiri and S'anchi inscriptions, Chandra Gupta II. lived from 82 to 93 of that era. It must therefore be either of the reigning sovereign, or of some now unknown era, other than that used in the Allāhābād column inscription.

"The second inscription is even more imperfect than the first, and has no date; but there is no doubt of its being an edict of the Gupta who recorded the Bhitari inscription, or of one of his descendants. General Cunningham imagines it to be a counterpart of the Bhitari record, and says that the portion extant "is letter for letter the same as the opening of the Bhitari pillar inscription." Such, however, is not the case. It is true, the first line has an epithet which occurs in the first line of the Bhitari inscription, and lines 3 to 12 are made up of words whose counterparts are seen in that record. It may also be admitted that Kumāra Devi, the wife of Chandra Gupta I, is named in the 5th line, and the word Gupta occurs in the 10th,

which leave no doubt as to the race of the sovereign who recorded the document. But as no specific name is legible, and the words common to the two records are mostly adjectives expressive of royal qualities which are generally attributed to all Hindú sovereigns, their evidence cannot be accepted as conclusive as to the identity of the two records. Were it otherwise, still it would be of no use, for we have positive proof to shew that they are not identical. The second line of the Bihār record has a word which does not occur in the first two lines of the Bhitari inscription, and the matter from the 13th line to the end, if my reading be correct, is new. In the 18th line there is mention made of Bhaṭṭa Guhila Swāmin, whose name does not occur in the Bhitari column. The conclusion, therefore, that I come to is, that the two documents were put up by the same race, and very likely by the same king, but on different occasions, and to record different occurrences. There is nothing in the record to justify the positive opinion of General Cunningham that it belongs to Skanda Gupta, son of Kumāra Gupta."

Tentative Readings of the Bihār Pillar Inscriptions.

- No. I. (१) इति चन्द्र + न्द्रानुजत + धन्यो (?) गृणरनदः
 (२) धपिपुनभुविस्मिन यः ध्यातः स्वर्किकु
 (३) सवयस्या गूढविक्रमेण कुमारगुप्ते
 (४) एतस्य देवस्य हि हव्यकर्यैः सदादगेभ्यो मि
 (५) चीकरद्देवनिकेतन सद्गं चिर्वंशपम्यः
 (६) —हं सोढस्तम्भवरोच्छ्रयप्रभासे त्रिमण्ड
 (७) दृक्षाणां कुसुमभरानताग्रसुभयकदम्बस्तवक
 (८) भट्टार्यायाभातिगृहं नवाधनिर्माकनिर्मल
 (९) अनुप्रधानैर्भुविमन्त्रिभिश्च दाकात्मसु +
 (१०) भुजाच्छायमेव चक्रे भट्टार्यादिः
 (११) गृणवटं करभनिपतिताचकटकः कटः
 (१२) सेतुः स्वर्कर्तुर्यज्ञस्तद्धिदं सुकुतं भजतु तत्रे
 (१३) काग्रहारे सम्माने १ सकनुनेभिर्नोप

- No. II. (१) + प्रिय्यामप्रतिरथस्य
 (२) + नकसथस्य कृतान्तः
 (३) भट्टार्यमेघा हर्तः
 (४) केचपौत्रस्य महाराजा
 (५) + देव्यां कुमारदेव्यमुत्पन्नस्य
 (६) + तत्परिगृहीतो महादेव्यां
 (७) सभागवतो महाराजा
 (८) + महादेव्या प्रः भवदेव्या
 (९) + पुत्रः तत्पादानुज्ञातः
 (१०) — — प्र रु गुप्तः
 (११) + + : परमभागवतो

- (१२) + + + भाट्टे काजपरकुशले
 (१२) + + य निविश्रामचैव
 (१४) छ + + + उपरिककुमारामाय
 (१५) द्विकुलवणिकपारिभारिक
 (१६) यचारिकशैलिकगौलिकसन्येस्य
 (१७) वासकादीनन्दादिद्रासादोपजीविनः
 (१८) तस्मात् विज्ञापितोस्मि मम पितामहेन
 (१९) —भट्ट गृहिलस्वामिना भट्टार्थिका
 (२०) पते बान्धवो कोपतौ सोकाय

I have removed the pillar from the place in which it lay, half buried in the ground, and set it up on a brick pedestal opposite the Bihár court house. It is much to be regretted that so much of the inscription has disappeared, as to make its further translation impossible, but it is curious on account of its undoubted great antiquity, and as evidence of the Gupta rule in Bihár. From the enormous number of Buddhistic remains found on the elevated plateau, which forms the site of the Bihár fort, there can be no doubt that a large vihâra and other Buddhist buildings of more than ordinary importance once existed on the spot, but, more than this, the colossal fortifications which surrounded it make it more than probable that it also formed the seat of the government of the surrounding country and the residence of its rulers. Not only have we the Gupta pillar, but numbers of the inscribed figures found there, bear the names of the Pála rājās of Bengal, of Madna-pála, of Mahi-pála, of Râma-pála and of Vighara-pála. Montgomery Martin* speaks of it as the residence of the Magha rāja, but this is exceedingly vague, as everything *not* constructed within the memory of man, is universally stated in Bihár to be "Magha." We know that at one time Rājagriha was undoubtedly the capital of Magadha, and there can be little doubt that the metropolis was subsequently removed to Patáli, but of this Bihár tradition and history are silent. Such evidence as we have got, inclines me to the conclusion that Bihár was, for centuries preceding the Muhammadan conquest, both at any rate the residence of the subordinate Hindú, Buddhist, or Jaina governors of the country, if not of the kings themselves. It seems probable that even its occupation by the governors of the surrounding district had ceased before the capture of the ancient fort at the end of the twelfth century. The popular tradition of Bihár makes the seat of government at this time to have been at Rohtás, and we know that when Muhammad Bakhtyâr Khilji marched into the fort, he found nothing there but a vihâra. Minhâj i Sirāj gives the following account of the fall of the ancient seat of Buddhistic and Hindú learning in his *Tabaqat-i-Nāṣiri*.† "It is said by credible persons that he went to the gate of the

* 'Gya and Shahabad,' p. 92.

† "The History of India as told by its own Historians," by Sir H. M. Elliot, London, 1869, Vol. 11, p. 306.

fort of Bihār with only two hundred horse, and began the war by taking the enemies unaware.... When Bakhtyār reached the gate of the fort, and when the fighting began, these two wise brothers [*i. e.*, Nizāmud-dīn and Samsimud-dīn] were active in that army of heroes. Muhammad Bakhtyar with great vigour and audacity rushed in at the gate of the fort, and gained possession of the place. Great plunder fell into the hands of the victors. Most of the inhabitants of the place were Brahmans with shaven heads. They were put to death. Large numbers of books were found there, and when the Muhammadans saw them, they called for some persons to explain their contents, but all the men had been killed. It was discovered that the whole fort and city was a place of study [madrasah]. For in the Hindī language the word Bihār (vihāra) means a college." I feel by no means sure that the vihāra thus destroyed was not a Buddhistic institution, and that the "Brahmans with shaven heads" were not Buddhist monks. Strange to say, hardly a Hindū idol has ever been found in the ruins, and some of the Buddhist figures bear inscriptions, *certainly not more ancient than the tenth century, possibly the eleventh.* The most modern of these Buddhist figures are those showing the Sage in the attitude of repose—the body leaning to one side, and the base and background decorated with the most profuse and exquisite ornaments, a very good example of which will be described when I come to speak of the ruins of Rohoī. In consequence of the extreme delicacy of the workmanship, these exquisite specimens of later Buddhistic art are scarcely ever to be found perfect, but I came on several mutilated figures of the kind in the ruins within the Bihār fort, and their base is generally covered with inscriptions, which serve to show that Buddhism flourished till a very late period in the heart of the country from which it sprung.

The Buddhistic remains of Bihār are not confined to the mounds at the fort. The dargāh or shrine of Qādir Qumesh which occupies its centre, is composed almost entirely of the materials of the vihāra, and its pavement is studded with enormous chaityas and pillars. The faqīrs of the shrine guard them with religious care, and eke a livelihood by permitting persons afflicted with toothache and neuralgia, to cure (?) their ailments by touching the afflicted parts with the very stone which their forefathers delighted to break, in order to gain the envied title of "the iconoclast [بت شکن]. A mile away from the fort, towards the banks of the Panchāna are the remains of several Buddhist buildings, the site of which is marked only by heaps of bricks; for the stones and pillars have been removed to adorn the masjid of Habi Khān Sūr and the great dargāh of Makhdūm Shāh Sharafud-dīn. A careful examination of the places shew them to have been built almost entirely of Buddhist materials. The position of these stones prevent any examination of them, but I feel sure many figures and inscriptions would come to light, if such could be made. The beautiful masjid of Habi Khān is now

completely deserted, and I have found several carvings in the floor. In the enclosure which faces it, I noticed a magnificent slab of basalt more than six feet long, and a foot thick, lying imbedded in the earth. I got it turned over, and found in the reverse a most curious (perhaps unique) series of twenty figures under pillared canopies;—one, the god Ganesa; two to eleven, Incarnations of Vishnu [Hindú]; twelve to twenty, the nine planets [Buddhistic]. Again to the north of the fort, in a plain called Logáni, there are traces of a large vihára and many granite columns. In the same direction I have found several beautiful basalt pillars which have been photographed. In the dargáh of Makhdúm Sháh Ahmad Charnposh, situated a little to the east of Logáni, I found a splendid monolith covered with the most delicate carving, and the doorway of the shrine itself is a grand specimen of Buddhistic art, and, according to tradition, once served as the great entrance to the vihára in the old fort. A figure of Buddha once occupied the centre, and the plinth is composed of three rows of the most exquisitely sculptured foliage, &c., and two other mouldings which once, doubtless, contained figures, are now covered with several *yards* of finely carved Persian verse. The doorway is eleven feet high and seven broad.

We may now leave Bihár and travel northwards along the course of the Panchána. At Soh Serái, some two miles north of Bihár, are the remains of a Buddhist temple. The ground is strewn with greystone columns of considerable size, most of them broken in several pieces. The base and capitals are square, and the shaft varies in shape—being first octagonal, then sixteen-sided, and lastly circular.

As I have said in the preceding chapter, I identify these remains with the Kapotika Sāṅghārāma of Hwen T'sang, situated two or three lis to the north of the isolated rock. The following extract is Julien's terse translation of his description of the locality.

'A deux ou trois li au sud de ce couvent, il y a une montagne isolée qui est taillée en terrasse, et dont le sommet hardi et imposant est embelli par une riche végétation, des bassins d'eau pure, et des fleurs parfumées. Comme il est un lieu remarquable par la beauté de ses sites, on y a bâti un grand nombre de temples sacres, où l'on voit souvent des miracles et des prodiges aussi rares qu'extraordinaires.

' Dans un *vihara* qui occupe le centre du plateau, s'élève une statue, en bois de sandal, de *Ranar-tsen-ts'ai-pon-sa* (*d' Avalóbritévara bódhisattva*) **** On voit plusieurs dizaines d'hommes qui se privent de manger et de boire pendant sept ou même quatorze jours, pour lui adresser des vœux. Ceux qui sont animés d'une foi ardente voient immédiatement l'image entière du *Bódhisattva*. Alors du milieu de la statue il sort environné d'un éclat imposant, leur parle avec bienveillance et leur accorde l'objet de leurs vœux. Il y a aussi

un nombre considérable d'hommes à qui il est donné de le voir dans toute sa majesté. Aussi la multitude de ses adorateurs s'accroît-elle de jour en jour. Les personnes qui lui rendent des hommages assidus, craignant que la foule des visiteurs ne salît cette vénérable statue, ont fait élever autour, à une distance de sept pas, une balustrade en bois hérissée de pointes de fer. Ceux qui viennent saluer et adorer la statue, sont obligés de se tenir en dehors de la balustrade. Ne pouvant l'approcher, ils jettent de loin les fleurs qu'ils viennent lui offrir. Ceux qui réussissent à fixer leurs guirlandes de fleurs sur les mains et sur les bras du *Bodhisattva*, regardent cela comme un heureux présage, et se persuadent qu'ils verront l'accomplissement de leurs vœux.

Three miles to the north of Soh, on the east bank of the river, which was once of considerable width, there are distinct traces of a stûpa and monastery, and the huge piles of brick on every side induce me to think that a flourishing town once surrounded the religious edifices. The whole of the ruins are encircled with luxuriant groves of pipal trees, and the villagers had collected all the fragments of chaityas, mouldings, &c., around their roots. A portion of a figure of Padmapâni was so firmly imbedded in the wood, that a piece nearly a foot square had to be removed before it could be extracted. The figures found at Rohoi are perfect and un mutilated, a very unusual circumstance in Bihâr, the record on the tomb of whose saints generally winds up by telling us that the deceased "was a breaker of images, and God has therefore given him a place in Paradise." The whole of the idols appear to have been removed (doubtless at the approach of the Muhammadans) and buried some distance from the ruins the open plain. They were discovered there by the zamindâr of Rohoi—a Bundelâ Râjput by caste—twenty years ago, and taken away by him to his garden, where I found them. They had been arranged merely for ornament, and he at once offered them to me. The principal idols are figures of Buddha in different positions resembling those already described. The finest is an idol, three feet two inches high, quite perfect, and resembling in many respects the one found at Tillâpâh. The crown worn is five-sided and very tall, and the body is not covered by a jacket. The female archers are seen at the feet of the attendants and not above them. Parallel to the head are figures holding scrolls. On the shoulders of the charioteer beneath the feet is seated a small female figure. The wheel of the chariot is in the centre, and a horse is seen within it with its head to the left. Of the remaining horses three gallop to the right and three to the left. A small figure of Padmapâni exquisitely carved. There is a Buddha seated in the hair, and a chaitya on either side of the head. Three alto-relievo figures of Buddha in the attitude of repose, in very fine black basalt, three feet nine inches. Around the body the stone has been completely removed. The body is inclined to the

right and is seated on a lotus throne supported by the richest scroll work. The right hand rests on the right knee, and the right foot depends from the throne, and is supported by a cluster of lotus blossoms. Its sole is turned outwards and bears the royal mark. The left foot is coiled up on the throne and shows the same mark as the hand. The richest possible carving is displayed on the ornaments. The dhūtī is bound up at the waist by an elaborate girdle, and a scarf passes across the body from left to right. The hair is dressed in a conical chignon, five inches high, composed of innumerable twists. In the centre of it a Buddha is seated. There are ornaments behind the ears, from which ribbons or tassels depend. The throne (which is nearly concealed by ornaments) is a square of scroll work, at each corner of which a large bird is seated. At each side of the figure is an elaborately dressed attendant. Between these and the main figure are lotus blossoms, springing from a delicately carved stem. The halo which surrounds the head is oval in shape and most elaborately carved, and in the centre is a diamond-shaped jewel on a line with the face. Right and left of the figure are groups of grotesque attendants, from whose hands springs a flowing scroll of rich geometrical pattern, which forms the background of the figure, and in the midst of which five Buddhas are seated, in different attitudes and on separate thrones. It bears the following inscription, thus rendered by Professor R. G. Bhandarkar :—

श्रीमद्विग्रहपाल देवराज्य सम्वत् [figure indistinct ४ or ५] मार्ग० दिने १६. देवध-
र्माय सुवर्णकार देहबुसुचे ? सुतस्य.

“Year of the reign of Śrīmad Vighrahapala four [2] Maggasirsha, 19th day. This is a religious gift of the son of Dehabū, a goldsmith.”

There are two Vighrahapālas in the Dīnājpur copper plate. The date of the latter is given as 1027, A. D. (See Prinsep's works, Mr. Thomas's Edition, vol. II. p. 271).

I also give a reading by Bābū Rājendralāla Mitra—

श्रीमद्विग्रहपालदेवस्य राज्य सम्वत् १२ मार्गदिने १५

दे ** य सुवर्णकार देहे क सु ** सुत सुत

“On the 15th of the month of Mārga (November-December), in the Samvat year 12 of the reign of Śrīmat Vighrahapāla Deva, (the rest illegible).”

Figure of Kabīr, seated on a chair, with one foot resting on a stool. The figure is three feet high. The hair is dressed in a profusion of ringlets, and the body is very corpulent. One hand rests on the knee grasping a well filled money bag, and the other holds apparently a pouch or gourd. (5) Small figure of Māyādevī quite perfect—standing on a lotus-leaf pedestal, and holding a lotus-flower in either hand. A Buddha is seated on either side of the head.

To the north of Rohoi I have not succeeded in finding any Buddhist remains, and those to the east are of very little importance. At a village called Káltá, seven miles east of Bihár, there are the remains of a large stúpa, and at another village which adjoins it to the south, called Jeya (Jíár), there is one of those beautiful tanks of clear water, surrounded by luxuriant groves of mangoe and pípál trees, which generally bordered the site of a Buddhist monastery. As might be expected there is a pile of ruins to the south of the pond, and a large heap of broken images, chaityas, and pillars.

IX.—Rájagriha in the Maha'wanso.

The pages of Mr. Turnour's elaborate work contain frequent allusions to Bihár or, more correctly speaking, to Magadha. In the second chapter, referring to the events which occurred some time about the year B. C. 543, we learn that Bimbisáro was the "attached friend" of Siddhatto (Sákhyá Muni), that he had been placed on the throne of Rájagriha, (which the translator mistakes for Rájmahall) by his father Bhátiyo in the fifteenth year of his age, that it was sixteen years subsequent to this event that the divine teacher propounded his doctrines to him, and that he continued to reign thirty-seven years after his conversion to the Buddhist faith. He was slain by his son Ajátasatru (the founder of new Rájagriha), the eighth year of whose reign saw the death of the sage, and who continued to rule in Magadha after this event for the space of twenty-four years. This information is very important in fixing the date of the removal of the capital to new Rájagriha. The death of Sákhyá Muni was succeeded by a period of fasting and lamentation, during which the sacred edifices of the town were repaired. After this, the *théros*, with Mahá Kásyapa at their head, approached the monarch, and asked him to build for them "a session hall." He granted their request, and erected a splendid chamber in the place named by them, viz., *by the side of the Webhára* [Baibhár] *mountain, at the entrance of the Sattapani cave.* This confirms in every respect the identification of the cave made in Chapter IV. He then records the reigns of the four succeeding kings of Rájagriha, who all appear to have gained the throne by the murders of their fathers and immediate predecessors, and that finally some ninety years after the death of Buddha, the last scion of the paricidal race was deposed, and one Susanágo elected in his stead. A few years later, Rájagriha became the head quarters of one of the schisms in the Buddhistic Church, which had now begun to spring up on all sides. The founder of the new dynasty had a son called Kálásoko, who was succeeded by his ten sons reigning conjointly for some forty-four years. The last surviving brother was slain in Rájagriha by a Bráhmaṇ, named Chánaka, who placed a member of the old Moriyan dynasty, (one Chandagatto) on the throne, who reigned for thirty-four years. His son Bindusáro ruled

over *all India* for twenty-eight years, and was succeeded by "the pious and supernaturally wise Asoka," who caused *his own inauguration to be solemnized in the city of 'Pátaliputto.'* Rájagriha, then, appears, to have continued to flourish for at least two hundred and eighteen years after the death of Buddha. It was then that the old seat of government was given up to the Bráhmans as stated by Hwen Thsang, but Buddhism must have continued to flourish there; for we read almost in the next page of one Sonako of Banáras coming to the "mountain-girt city [Rájagriha] on trade, together with his parents, attended by a retinue of fifty-five *bráhmanical devotees*, who had accompanied him thither."* He repaired at once to the great Kalanda-Venouvana monastery, and soon appears to have attained to sublime honour of the priesthood under the auspices of the théro Dásako, and became the means of converting to the faith of Buddha, Tisso, younger brother of Asoka and 'sub-king of Magalha.' The great Dharmásoka himself soon after became "a relation of the religion of Buddha."

In speaking of the number of Buddhist priests attracted to Ceylon during the reign of Duttagamani, the fourteenth in succession after the death of Buddha (B. C. 161—137), we find that one Indagutto, a sojourner in the vicinity of Rájagriha, came there, accompanied by 8000 *théros*. A still greater number came from Wesali, Banáras, Kausámbi, and other places. We are thus in possession of the fact that Rájagriha continued to be one of the chief seats of Buddhism in India up to a comparatively short time before the birth of Christ. Nálándá is not even mentioned as one of the viháras contributing members to the Ceylon assembly, and this lends aid to my own belief of the comparatively recent date of its erection and prosperity.

X.—Na'landa' [Barga'on].

The village of Barga'on lies exactly six miles south-west of Bihár and seven miles north-east of Rájagriha. From the row of conical mounds to the south of the modern village, the "solitary rock" of the former place, and the rugged mountains which once surrounded the ancient capital of Magadha, are distinctly visible, both objects presenting a break in the broad expanse of poppy-fields and rice-lands which meet the eye in all directions, and which gently slope from the foot of the Rájgir hills to the banks of the Ganges itself.

By its position, by the comparison of distances, and by the aid of inscriptions, Bargaon has been identified, beyond the possibility of a doubt, with that Vihara-grám on the outskirts of which, more than a thousand years ago, flourished the great Nálándá monastery, the most magnificent and most celebrated seat of Buddhist learning in the world. When the

* Maháwanso, p. 29.

caves and temples of Rájagriha were abandoned to the ravages of decay, and when the followers of Tathágata forsook the mountain dwellings of their great teacher, the monastery of Nálándá arose in all its splendour on the banks of the lakes of Bargáon. Successive monarchs vied in its embellishment; lofty pagodas were raised in all directions; halls of disputation and schools of instruction were built between them; shrines, temples, and topes were constructed on the side of every tank and encircled the base of every tower; and around the whole mass of religious edifices were grouped the "four-storied" dwellings of the preachers and teachers of Buddhism.

Fah-Hiyan visited the spot in 415, A. D., and tells us that Sáriputra was born at Nálándá, and that he subsequently returned to it to enter nirváṇa. He also informs us that this memorable event in Buddhistic ecclesiastical history had been commemorated by the erection of a lofty town which he saw, but he says nothing of the existence of any vihára or sangháráma. Hwen Thsang, according to the chronology of his travels, so ably and elaborately established by Major-General Cunningham, arrived at the gates of the great Nálándá vihára somewhere about the 1st March 637, A. D., and spent within its precincts, and in visiting the holy places in its immediate neighbourhood, no less a period than twenty-two months. His description of the antiquities of the place, of the manners, customs, and language of its inmates, of the pious gifts of its long line of royal benefactors, and of the architecture and decorations of its countless temples, pagodas, and shrines, is singularly minute and vivid, and fills a large space in the first volume of M. Julien's translation of the '*Mémoires.*' Before proceeding to describe, and subsequently to attempt an identification, of its ruins, I feel bound to quote somewhat at length from the records of the pilgrim. He writes as follows: "Le dixième jour, les religieux du couvent de *Na-lan-to* (Nálándá vihára) envoyèrent au-devant de lui quatre hommes d'une vertu éminente [*i. e.*, to Bodh-Gayá]. Il partit avec eux et après avoir fait sept *yóđjanas*, il arriva au village où est situé le couvent. Ce fut dans ce village (appelé *Nalandagrama*) que naquit l'honorable *Meo-lien* (*Māndgalya yāna*). Au moment de son arrivée, il vit en outre deux cents religieux et un millier de fidèles qui accouraient au-devant de lui avec des étendards, des parasols, des parfums, et des fleurs. Ils tournèrent autour lui en célébrant ses louanges et entrèrent dans le couvent de Nálándá. Une fois arrivés, ils se joignirent à la multitude des premiers religieux. Quand le Maître de la loi eut fini de les saluer, ils placèrent sur l'estrade du président un fauteuil particulier et le prièrent de s'y asseoir. La multitude des religieux et des fidèles s'assit pareillement. Après quoi on chargea le *weí-max* (le *Karmadāna*, le sous-directeur) de frapper la plaque sonore *Kien-tehi* (*Gnanti*) et d'inviter à haute voix le Maître de la loi à demeurer dans le couvent, et à faire usage en commun de tous les ustensiles et effets des religieux qu'ils étaient rassemblés."

Here follows a long account of the interview of the traveller with the abbot Sitabhadra.

After describing with considerable minuteness the rations dealt out to him by the ecclesiastics of the vihâra with an unsparing hand, he sets about the more difficult task of sketching its history, and writes,—

“ Le mot (*Nâlanda*) veut dire en chinois ‘ celui qui donne sans se lasser,’ voici ce que les vieillards racontent à ce sujet. Au sud du couvent situé au milieu d’un jardin d’arbres *An-mo-lo* (*Amras*), il y avait un étang qui était habité par un dragon, nommé *Na-lan-to* (*Nâlanda*). A côté, on construisit un couvent qu’on appela, pour cette raison, le couvent de *Na-lan-to* (*Nâlanda vihâra*).

“ On rapporte encore que jadis Tathâgata, à l’époque où il menait la vie d’un *Pan-sa* (Bôdhisattva), devint roi d’un grand royaume, et fixa sa résidence en cet endroit. Touché de compassion pour les orphelins et les indigents, il répandit constamment des bienfaits et des aumônes. Les habitants, pénétrés de reconnaissance, surnommèrent cet endroit ‘ *Le pays de celui qui donne sans se lasser.*’ Dans l’origine, ce lieu était un jardin d’Amras, appartenant à un riche maître de maison (*Grihapati*). Cinq cents marchands l’achetèrent au prix d’un million de pièces d’or et le donnèrent au *Bouddha*.

“ Dans cet endroit, le Bouddha expliqua la loi pendant trois mois, et parmi ces marchands, il y en eut beaucoup qui obtinrent le fruit (*de l’Intelligence, Bôdhi*).

“ Après le *Nirvâna* du *Bouddha*, un ancien roi de ce royaume, nommé *Cho-kia-lo-o’-l’ie-to* (*Çakradetya*), rempli de respect et d’amour pour le *Bouddha*, construisit à ses frais ce *kia-lun* (*Sanghârâma*).

“ Ce roi étant mort, eut pour successeur son fils *Fo-to-k’io-to* (*Bouddha goudpa*), qui, après avoir pris les rênes de ce grand royaume, construisit plus loin au sud un autre *kia-lun* (*Sanghârâma*).

“ Un peu plus loin à l’est, son fils, le roi *Ta-ta-kie-to* (*Tathâgata*) bâtit un autre couvent.

“ Plus loin au nord-est, son fils *Po-lo-o’-l’ie-to* (*Bâladitya*) bâtit un autre couvent.

“ Dans la suite, voyant qu’un saint religieux venait de Chine, et se dirigeait vers lui pour recevoir de ses mains les provisions nécessaires, il fut transporté de joie, quitta son trône et embrassa la vie religieuse.

“ Il eut pour successeur son fils *Ea-che-lo* (*Vadja*), qui plus loin au nord construisit un autre couvent. Quelque temps après, un roi de l’Inde Centrale bâtit à côté un autre couvent.

“ De cette manière, six rois, qui montèrent successivement sur le trône, se livrèrent chacun à de pieuses constructions. Le dernier de ces rois entourra tous ces couvents d’une enceinte de murs en briques et les réunit en un seul.

Une porte qu'il établit y donnait accès. Il construisit des salles séparées (pour les conférences), et partagea en huit cours l'espace qui se trouvait au centre des Sanghârâmas. Des tours précieuses étaient rangées dans un ordre régulier; des pavillons ornés s'élevaient comme des pies élancées; des domes hardis se dressaient au milieu des nues, et les faîtes des temples semblaient voler au dessus des vapeurs du ciel. De leurs fenêtres, on voyait naître les vents et les nuages, et au dessus de leurs toits audacieux le soleil et la lune entraient en conjonction. Tout autour serpentait une eau azurée que des lotus bleus embellissaient de leurs calices épanouis, et de beaux *Kie-nie* (*Kanabras*), "*Butca frondosa*," laissaient pendre leurs fleurs d'un rouge éblouissant, et des *Amras* les protégeaient au dehors de leur ombrage épais.

"Dans les diverses cours, les maisons des religieux avaient chacune quatre étages. Ses pavillons avaient des piliers ornés de dragons et des colonnes ornées de jade, pointes en rouge et richement ciselées, et des balustrades. Les linteaux des portes étaient faits avec élégance, les toits étaient couverts de tuiles brillantes dont l'éclat se multipliait en se reflétant, et variait à chaque instant de mille manières.

"Les *Sanghârâmas* de l'Inde se comptent aujourd'hui par milliers; mais il n'en est point qui égalent ceux-ci par leur majesté, leur richesse et la hauteur de leur construction. On y compte, en tout temps, dix mille religieux tant du dedans que du dehors, qui tous suivent la doctrine du grand *Véhicule*. Les sectateurs des dix-huit écoles s'y trouvent réunis, et l'on y étudie toutes sortes d'ouvrages depuis les livres vulgaires, les *veito* (*Vedas*) et autres écrits du même genre jusqu'aux traités *In-ming* (*Hetouvidyâ*), *Ching-ming* (*Cabdarvidyâ*), la médecine (*Tchikitsâcidya*), les sciences occultes (*Krya*) et l'arithmétique (*Samkhyâna*). On y compte mille religieux qui peuvent expliquer vingt ouvrages sur les Câstras, cinq cents qui en comprennent trente, et dix seulement, y compris le Maître de la loi, qui en possèdent cinquante. Mais le maître *Riai-him* (*Cilabhadra*) les avait tous lus et sa vertu éminente et son âge vénérable lui avaient donné le premier rang parmi les religieux. Dans l'intérieur du couvent, une centaine de chaires étaient occupées chaque jour, et les disciples suivaient avec zèle les leçons de leurs maîtres, sans perdre un seul instant."

This, then, was Nalandâ, as Hwen Thsang saw it, twelve centuries ago, let me now attempt to describe its ruins as they exist in our own times.

Approaching them from Bihâr, we first arrive at an enormous tank, running due east and west for nearly a mile and about a quarter of a mile broad. It is now called the "*Diggî Pokhar*," and is surrounded on all sides by fine groves of mango trees. At the west end of the lake is situated the modern village of Begumpûr. About three hundred feet to the south of the village is a large square mound, once apparently flanked with small

towers and having no connection with the Buddhist remains, being evidently the ruins of a Muhammadan fort. Immediately to the south of this are two small Buddhist topes, some fifty feet in circumference and not more than six or eight feet high. I found in these several fine Buddhist and Hindú idols, notably a crowned figure of Vishnu, seated on his sacred bird; and several figures which I recovered from the village itself, evidently came from the same place. One thousand eight hundred and twenty-five feet south-west of these topes is a very beautiful square tank, known as the "Súraj Pokhar," which measures as near as possible four hundred feet on each side. This pond was once flanked with a row of small pagodas on the north side covered with massive brick cupolas, and their ruins still exist in tolerable entirety. I clearly marked out six of these temples. On each side of the pond were three brick gháts, and the ruins of these may still be traced. The banks of the tank served also as the repository for chaityas. Several of these were taken out of the tank by me, and I saw many others beneath the clear water. About twenty feet to the east of the tank is a mound, evidently formed of the remains of some large brick building, surmounted by a luxuriant *bar* tree. Due south of this, and at a distance of one thousand two hundred feet, is another enormous mound six hundred feet in circumference, and nearly fifty feet in height. Between this and the next tumulus, which is seven hundred and fifty feet distant in the same direction, is a brick enclosure containing seven Buddhist figures, now regularly worshipped as Hindú deities. The largest, yecept the *Teliá Bhandár*, (see note in the concluding chapter), is of colossal proportions, and resembles very much, though it is of inferior workmanship, the great Sri Bullum Buddha of the Titráwan monastery. The following are the measurements of the *Teliá Bhandár*—

	Feet	Inches.
Crown of head to chin,	2	6
Crown of head to seat of throne,	5	6
Length of head,	1	4
Length of foot,	1	3
Circumference of head at forehead,	4	4
Shoulder to elbow,	2	7
Elbow to hand,	1	8
Hip to knee,	3	2
Knee to ankle,	2	9
Round the wrist,	5	0
Round the breast,	5	7
Round the waist,	1	9
Round the thigh,	2	8
Round the neck,	3	1

Three hundred feet to the south of the last-mentioned tumulus is a third great tope, sixty high and more than one thousand feet in circumference, the largest and most important of the mounds, surrounded by a series of smaller topes, and forming the centre of the ruins of Bargáon. I found this on the 15th October, 1871, literally a small hill, the surface of which was broken only by a depression on the top, and the remains of a former excavation on the eastern slope; the sides covered with a tangled mass of thicket and brushwood, and studded here and there by a solitary mango or date tree.

The results of my excavations have been already given in the third chapter.

Three hundred feet to the south of this is a fifth mound, of about six hundred feet in circumference, but of greater elevation than any of the rest. Seven hundred and ninety feet south of this is a sixth tumulus of inconsiderable size and height. Seven hundred and thirty feet south of the sixth mound is a large lake, called the "Indra Pokhar," which faces the whole of the southern side of the ruins of the monasteries. The three central mounds are bounded on the west by three lakes, known respectively by the name of "Déhá," "Bullén," and "Kunduá;" and some distance west of the fifth tumulus is a pond, called "Suráha," on the east bank of which are unmistakable traces of Buddhist ruins. South of this is another pond called "Dudhdéha," and a third known as "Satyauti," which also is faced on its east side by the ruins of a temple or tope.

Seven hundred and twenty feet due east of the great central tumulus is another enormous mound, which I shall designate as the seventh mound. It is nearly as large as the central mound itself, but of much less elevation. In the level plain between these two heaps is a mass of overgrown walls and jungle-covered hillocks, broken here and there by a square patch of scanty cultivation.

Some distance south-east of this seventh tope is the village of Kapteswari, and the remains of an eighth temple or vihára, nearly reduced to the level of the surrounding plain by the toil of an industrious cultivator, who yearly ploughs across its surface, and whose grandfather discovered some fine idols and pillars, which are now in my collection. The east of the ruins is faced by a tank called the "Pansokar." The modern village of Bargáon lies to the north of the ruins, and is in a line between the Pansokar and Súraj Pokhar tanks.

The wall which surrounded the whole mass of conventual buildings is gone, and has left no trace; nor could the most diligent search light on the whereabouts of the great gate. Bargáon has been the brick quarry of Bihár for centuries; hence it is that the walls, gates, and houses have disappeared, while the massive tumuli formed by the débris of the temples are as yet untouched.

Before leaving Bargáon, I made a careful survey of the ruins between the mounds, and succeeded in distinctly tracing eight halls or yards. This mass of ruins lies parallel to the great mounds numbered by me III, IV, and V, and between them and No. VII. No. I (to the extreme south) is 114 feet east and west, and 84 feet north and south; No. II, 72 feet east and west by 40 feet north and south; No. III, 60 feet east and west by 50 feet north and south; No. IV, 40 feet east and west and 70 feet north and south; No. V, 195 feet east and west by 75 feet north and south; No. VI, 100 feet east and west by 70 feet north and south; No. VII, 100 feet east and west by 70 feet north and south; No. VIII, 100 feet east and west by 60 feet north and south. I discovered in these ruins several gateways and pillars, but no idols. These are evidently the remains of the eight "halls of disputation," described by Hwen Thsang as being built on the land between the monasteries and the dwelling of the teachers of the "right law."

It is a remarkable fact that the line of mounds still bears the name of "*dagop*" by the country people. Is not this the *dágoba* of the Páli annals? They are also called *tílá* and *deará*.

Subsequent to the excavations of October 1872, I employed with permission, for some three or four weeks, the labour of about twenty prisoners, and succeeded in making a deep cutting on the northern face of mound VII.

The result has been the partial uncovering of the northern façade of a square building flanked by four circular towers, about twenty-five feet in circumference. The whole of the wall is decorated with the most beautiful brick mouldings divided by lines of niches, containing Buddhist figures at regular intervals. The cornices which surround the towers are quite perfect, and the whole exterior appears to have been traversed by small staircases leading to the roof. The thorough exploration of these magnificent ruins would lead to results as important to the historian as to the archaeologist, and I still hope the task may be undertaken at no distant day by the Government. There are no difficulties to contend with; the ground which is covered by these mounds, is a barren waste, and the proprietor, Chaudhari Wahid 'Alí, is quite willing to permit their excavation, and to facilitate matters as much as he can.

Of the nature of these remains there can be little doubt. Various writers have made Bargáon the capital of a great kingdom, the seat of the rule of some mysterious prince of Magadha; but this theory seems to me distinctly negatived by the appearance of the ruins. At Bargáon one sees no lofty wall; no rugged battlements; no ruined towers and bastions,—the characteristic features of Kuságárapura, the royal city of Bimbisára, or of Rájagriha, the capital of his son. The exploration of its ruins already made, and every fresh excavation that may hereafter be accomplished, will, I think, lead to the conclusion that "*Vihára-grám*" was merely

a great "vihāra" or college—perhaps rather a cluster of vihāras—a university, in fact, of Buddhist learning, Buddhist philosophy, and Buddhist divinity—defended alone by its sanctity, patronised by a long succession of princes, and regarded by Buddhists generally as the chief seat of their faith from Tibbat to Ceylon.

XI.—Conclusion.

With the mound of rubbish and broken idols, which marks the site of the once doubtless important vihāra on the northern shore of the Jir lake, ends my attempt to sketch the existing antiquities of Bihār.

Written, as it has been, at a distance from books and from those so able and so willing to give me assistance, I feel sure that it must be replete with errors and omissions; but I shall feel my labours amply repaid, if I have demonstrated to those who truly admire and understand the archaeology of India, the vast importance of the subject. There is scarce a mile in the whole tract of country which does not present to the traveller some object of deep interest, and the curiosity thus awakened and intensified at almost every step, is speedily concentrated as it were, on the ruins of the hill-girt capital of Magadha, or the mounds and figures which mark the site of the greatest of great Buddhistic vihāras. The associations of the former bring us back to that far distant Brāhmanical period, the obscurity of which is dispersed only at intervals by the occasional gleam of some recovered treasure from the poetical storehouse of the Mahabhārata or the Rāmāyana; and then passing swiftly over the space of an unknown and indefinite number of centuries recel to our recollection the birth and growth and glory of the Buddhistic faith. Rājagriha belongs to one age of the religion of Sākhyā Muni, and Nalandā to another: the former to the early days of the new faith; to the time of true Buddhistic austerity; of rude buildings; of mountain solitude; of the constant contemplation which was alone consummated in "nirvāṇa;" the second to the age of artistic cultivation and skill; of a gorgeous and luxuriant style of architecture; of deep philosophical knowledge; of profound and learned discussions; and of rapid progress in the path of civilization. In Rājgir, the archaeologist lights uniformly on rude battlements of giant proportions; on temples of the crudest design; and on cave dwellings of the greatest possible simplicity of construction. The thousand years which elapsed brought about a vast and remarkable change: the grottoes of the "arhats" gave place to the four-storied and highly ornamented pagodas of the ecclesiastics of Bargāon; the four laws of Sākhyā Muni were overlaid with the interpretations and commentaries of a countless multitude of sages and philosophers; the simple topes of Rājagriha were exchanged for a style of architecture more gaudy and

elaborate perhaps, than any in the world; and intricate and profound discussions took the place of bodily austerity and mental abstraction. The monastery, or, more strictly speaking, the university of Nālandā, was as it were a circle from which Buddhist philosophy and teaching diffused itself over Southern Asia. It was here that Aryadeva of Ceylon attached himself to the person of the great teacher Nāgārjuna and adopted his religious opinions, and it was here that Hwen Tshang spent a great portion of his pilgrimage in search of religious instruction.

But even in the far off times when Buddhism was as yet unknown, the remote period of Krishna and Bhīma and Jarāsandha, we find the natural features of Rājagriha almost the same as when Sākhya Muni trod its mountain sides, five centuries before the birth of Christ, as when Hwen Tshang again described them after the lapse of eleven hundred years, or as they are seen year after year during our own time by the English traveller or the Jaina pilgrim. Let me quote a few lines from the great Sanskrit Epic, the deep interest of the subject being my excuse.

Mahābhārata, Sabhāparva, 795—801, and 807—811.

उत्तीर्य सरयूं रम्यं दृष्ट्वा पूर्वञ्च कोशलां ।
 अतीत्य जम्बुमिथिलां मालां चर्मखर्तौ नदीं ।
 अतीत्य गङ्गां शोणञ्च त्रयस्ते प्राङ्मुखस्तदा ;
 कुशचीरच्छदा जम्बुर्मागधं क्षेत्रमच्युताः ।
 ते शस्त्रद्वेधाधनाकीर्णमग्निसन्तं शुभद्रुसं ।
 गौरधं गिरिमासाद्य ददृशुर्मागधं पुरं ।
 एष पार्थ महान् भाति पशुमान्नित्यमग्निसन्तं ।
 निरामयः सुवस्त्राढ्यो निवेशो मागधः शुभः ।
 वैद्यारो विपुलः शैलौ वराहो दृषभस्तथा ।
 तथा ऋषिगिरिस्तात शुभाद्यैत्यकपञ्चमाः ।
 एते पञ्च मह्यश्टङ्काः पर्वताः शीतलद्रुमाः ।
 रत्नन्तीवाभिमंहत्य मंहताङ्गा गिरित्रिजं ।
 पुष्पवेष्टिशखायेर्गन्धर्वद्विर्सनारसैः ।
 निगूढा इव लोचाणां बनैः कामिजनप्रियैः ।

अपरिहार्या मेघानां मागधा मनुना कृताः ।
 कौशिको मणिमंथेव चक्राते चाप्यनुग्रहं ।
 एवं प्राप्य पुरं रम्यं दुराधर्मं समन्ततः ।
 अर्थसिद्धिंश्चानुपमां जरासन्धोऽभिमन्यते ।
 वयमासादने तस्य दर्पमद्य हरमहि ।
 एवमुक्त्वा नतः सर्वे भ्रातरौ विपुलौजसः ।

वार्क्यैः पाण्डवै चैव प्रतस्तुर्मागधं पुरं ।
 हृष्टपृष्ठजनोपेतं चातुर्वर्ण्यसमाकुलं ।
 स्कीतास्त्वमनाध्व्यसामेदुष्य गिरिव्रजं ।
 मतो द्वारं समासाद्य पुरस्य गिरिसुच्छितं ।
 वार्हद्रथैः पूज्यमानं तथा नगरवासिभिः ।
 मागधानानु रुचिरं चैत्यकान्नरमाद्रवन् ।

Translation by the Rev. Dr. J. WENGER.

Passing the lovely Sarayú, seeing eastward Kosalá, going onward, they proceeded to (towards ?) Mithilá, Málá, the Charmanvati river ; (796) and passing the Ganges and the Sóna, those three immortal ones, with their faces eastward, and dressed in clothes of *kusa* grass, went on towards the Mágadha territory ; and (797) having reached Goratha, that mountain ever crowded with cattle-wealth, (abundantly) watered, (covered) with beautiful trees, saw the Mágadha city. (798) O king ! great, full of cattle, well watered, salubrious, abounding with fine buildings does it look, that goodly Mágadha residence. (799) Vaihára, that grand mountain,* Varáha (= Boar ?), and Vrishabha (= Bull ?), as well as the Rishi-mountain,— Sir—, goodly ones, having Chaityaka as their fifth (companion)—(800) these five large peaked mountains, covered with cool trees, (look) as if they, closely encompassing it with their compact bodies, protected *Girivraja*, (801) though they are hidden in woods, dear to lovers, of *lodhra* trees, and (adorned) with boughs dressed in blossoms,—fragrant and lovely (forests).

(807) Mágadha (town) was made by Manu so that the clouds might not avoid it ; Kaushika and Manimán also conferred favours upon it. (808) Having got a residence so lovely, and on all sides difficult to attack, Jarásandha prides himself on his success ; but on encountering him we will to-day mar his pride. (809) Having thus spoken, the valiant brothers all, Várshneya and the two Pandavasa, set out for the Mágadha town, (910) and reached it, even Girivraja, frequented by a people in excellent condition of body, crowded with men of the four castes, holding high festival, and inaccessible to an assailant. (911) Then having reached the city gate, which was a lofty hill, held in veneration by the descendants of Vrihadratha and the (other) inhabitants of the town, they ran into the interior of (or, up to) Chaityaka, the delight of the Mágadha people, (or, the ornament of the Mágadha city).†

* Or, the rock *Vipula*. If this rendering be adopted, the clause which succeeds "Sir," must be translated, "five goodly chaityakas," a rendering advocated by some able pandits. If one might read चैत्यकपञ्चकाः for चैत्यकपञ्चमाः, this rendering would be perfectly justifiable.

J. W.

† I do not profess to understand the last line. Perhaps the clause "they ran into the interior of Chaityaka" should be inserted earlier, after the word "hill." Chaityaka appears to have been a hill utilised as part of the fortifications of Magadha, (see line 815) or it may have been only a sacred tree.

J. W.

I must now bid adieu to the historical associations of Bihār, and endeavour to point out in as few words as possible the practical results of my labours. *First.* The large number of inscriptions discovered by me, covering for the most part the base of some Buddhistic image or frieze, will tend to throw considerable light on the history of the Pāla dynasty of Bengal. In the chapter on Bihār I have given two of the time of Madanapāla and Vīgrahapāla; in that on Ghosrāwan and Titrāwan three of Mahipāla, Rāmapāla, and Devapāla; and I now proceed to give two others belonging respectively to the reigns of Gopāla Deva and Mahipāla. The former was found *in situ* at Nālandā, on the base of a very curious idol, of which the following is a tolerably correct description: a four-armed figure of a goddess, three feet high, seated on the back of a lion-couchant. On either side of the head are winged attendants. The hair is dressed in a conical shape, a miniature figure of Buddha being seated in the midst of it. The head is surrounded by an oval halo. The ornaments are as usual. The right leg is dependent from the throne, and rests on a lotus-blossom. The left is gathered up on the lion's back; the sole of the foot, being turned outwards, touches the right thigh and exhibits the "royal sign." The upper hands are upraised; the right holding a hammer, the left a mace. The lower hands grasp pincers, and are stretched forth right and left in the act of seizing the tongues of two unfortunate attendants who crouch at each corner of the figure, with their hands tied with cords behind their backs.

Bābū Rājendralāla Mitra has given the following transcript and translation of the inscription in the plinth—

सम्बत् ७ आश्विनसुदि ८ परमसहारक महाराजाधिराज परमेश्वर श्रीगोपालराज
निमा(?)न तद्गायां(र्यं) श्रीवागीश्वरीमहारिका सुवज्जवीदेसस्थाः ।

"In the eighth of the waxing moon in the month of Āsvina, Samvat 7, the most worshipful, the great king of kings, the great lord, Sri Gopāla Rājā, and his wife the worshipful Vāgis'vari of the country of Suvalavi, erected this."

Bābū Rājendralāla remarks that the verb "erected" is a conjectural rendering of the doubtful letters *ni mā na*, supposed to be the remains of the word *nirmāna*, but General Cunningham sees in the same characters the word Nālandā. The inscription is of considerable historical importance.

The next inscription also comes from Nālandā, and from the jamb of the doorway described in the chapter on Buddhistic remains. The following reading of it is by Bābū Rājendralāla Mitra—

श्रीमन्महीपाल द(दे)वराज्ये सम्बत् ॥

अग्नि राघद्वार तते देयधर्माय प्रवरमा[न]द्यायान यायिनः परमोपासक श्रीमत्तैला-
द्वकीयज्ञधीप कौशाम्बी विनिर्गतस्य हरदत्त नप्तुर्गुप्तदत्त सुत श्रीबालादित्यस्य यदत्त पुण्यं
तद्भवतु सर्व्वेभ्यः राशेरनुचरज्ञानावाप्तय इति ॥

"In the reign of Śrīmat Mahipāla Deva. Samvat 913 (= A. D. 856.) This is a religious gift of Bālāditya, the son of Gurudatta, and grandson of Haradatta, a follower of the noble Mahāyāna school, a devout worshipper, who came from (the city of) Kausāmbi, (wherein he was) the chief among the wise men of the auspicious Tailādhaka (clan). Whatever merit may accrue from this, may the same be to the advancement of the highest knowledge among the mass of mankind. The end."

The date is evolved by the translator from the words *agni*, "fire," (= 3); *rāgha*, "power," (= 1); and *dvāra*, "door," (= 9), which being transposed by the rule of *ankasya vānagati*, gives 913.*

The two marks, however, which succeed the word *samvat*, somewhat resemble the figure II, and Professor Rāmkriṣṇa Gopāl Bhandarkar reads it so accordingly. The inscriptions given in the present paper yield the following royal names of the Pāla race—

1. Go Pāla.
2. Mahī Pāla.
3. Madana Pāla.
4. Vighraha Pāla.
5. Deva Pāla.
6. Rāma Pāla.

Nos. 4 and 6 are additions to the list compiled by Bābū Rājendra-lāla Mitra from the combined results of several plates. Great light will be thrown on the subject by the complete deciphering and translation of the Munger plate, a task now in the able hands of the translator of the Nālandā inscriptions. I have, however, compiled the following list from the sources at present available—

1. *Go Pāla*
2. *Dharma Pāla*
3. *Sūra Pāla*
4. *Mahī Pāla*
5. *Deva Pāla*
6. *Vighraha Pāla I.*
7. *Madana Pāla*
8. *Vighraha Pāla II.*

* Since supplying the above translation, I have had an opportunity of examining the jamb, and looking at the smooth space after the word *Samvat*, just enough for six letters, I am disposed to think that the figures or symbolical letters for the year were never put in. The two upright strokes after the word are unmistakably *dāndīs* and not figures. The word which I first read *rāgha* is *radha*, which is a name of the month *Vaisākha* (April-May). This would give the date 3rd of Vaisākha. The words *dvāratate* would in this case mean, "spread on the door, i. e., the gift was given at the gate.

9. *Rājya Pāla*
10. *Jaya Pāla*
11. *Nārāyana Pāla*
12. *Mahendra Pāla*
13. *Naya Pāla*
14. *Rāma Pāla*
15. *Govinda Pāla.*

The name of the last mentioned monarch occurs in an inscription in Gayā,—dated, Samvat 1233, = A. D. 1175, and in another of 1135, = A. D. 1178.

The *kutila* of the inscription of Rāma Pāla, is quite modern, but it exists on the plinth of a typical Buddhist figure. I place Rāma Pāla, therefore, immediately before Govinda Pāla, and assign to him the approximate date of 1150. The carving in question is perhaps the most beautiful in my collection, and its existence tends to shew Buddhism in general, and the Titrāwan vihāra in particular, flourishing within fifty years of the Muhammadan conquest of Bihār. Everything I have seen, tends to establish the comparatively modern existence of Buddhism in Bihār, and even now Jaina (or in other words *sectarian Buddhist*) temples crown the hills of Rājagriha, and exist and prosper, both at Nālandā and in the city of Bihār itself.

A careful examination of the plinths of all the idols would, I feel convinced, disclose a greater number of inscriptions, nearly all of which would tend more or less to throw light on the dates and succession of the great line of Pāla kings which between the eighth and the eleventh centuries at any rate, exercised supreme power in Bihār. Everything I have found shews the city of Bihār to have been their capital, so far at least as Magadha was concerned, and to have been as important and prosperous during the epoch I am writing of, as Kusagārapura was at the time of Bimbisāra, or Rājagriha under the auspices of his son Ajātasatru and his successors.

Secondly.—Socially speaking the figures now collected throw a great deal of light on the domestic life of the times they belong to. They illustrate most amply the shape and form of ornaments, weapons, and utensils; the character and pattern of dress (*e. g.*, the existence of boots!), the details of religious ceremony, the style of architecture, and every other point connected with the manners and customs of the period. They serve to show the effect of Buddhistic art on the national taste, and are invaluable aids to the painter and sculptor. Thus much for the social aspect of the question. But it may well be asked what has been the effect of the long existence of Buddhism on Bihār society, or has it merely passed over its surface like a shallow stream, leaving no marks by which to track its course? Buddhism, the great leveller of caste distinctions, the social

and religious system which saw no distinction between the Bráhmaṇ and the Sudra, the priest and the artificer, has had a considerable effect in giving the great commercial clans of Bihár a position far different than that which they would have occupied in a purely Bráhmaṇical community. Nearly the whole trade of Bihár is in the hands of the *Telís* (or oil-sellers), and they rank far higher than the majority of the *banyan* or merchant class. This distinction has doubtless a foundation in Buddhistic times, when the *Telís* had become leading men in the social scale.* The great doorway at Bargáon was dedicated "to the advancement of the highest knowledge" by Baláclitya—"chief among the wise men of the *Tailádhuka* clan;" an image near Giryak appears to have been "consecrated by the pious devotion of a *Telí* of Mathurá;" while the great Buddha at Bargáon is still called the *Telid Bhandár*, and one of the most remarkable figures at Titráwan,—the *Telid Dhube* (?). In addition to this, the Ghosráwan tank is still called the *Sáo Pokhar*,—*Sáo* being the common *upádhi* of the oilman's tribe. I might multiply instances of the effect of Buddhism on caste, but for the present this will suffice.

Thirdly.—As regards the architecture and ceremonies of the Buddhistic faith, and the history of its gradual development, the writer could receive no little aid from a careful consideration of the Bihár sculptures. They also tend to throw considerable light on the much vexed question of the priority or otherwise of the Bráhmaṇical and Buddhist creeds. The great *linga* found at Apsar is an instance of what I mean. Everything I have found in Bihár fully convinces me of the anterior existence of Hinduism, the coeval duration of both faiths, and the final decay of Buddhism, under the combined influence of internal decay, Bráhmaṇical increasing power, and Muhammadan conquest.

I trust my readers will be now convinced that the historian, the artist, and the antiquarian, may some day derive material assistance from an inspection and careful consideration of the temples and monasteries I have excavated, and the collection I have formed. For myself I disclaim anything but the very smallest amount of scientific knowledge on the subject, and cheerfully leave the drawing of historical and social deductions and conclusions to others, being more than content with the no small merit of having described the greater part, arranged a lesser portion, and discovered a few of the Buddhistic remains of Bihár in Patna.

* So large is the proportion of *Telís* in Bihár society, that a common popular refrain says—

وي تيدون هين بهار تركي تيلي تار

Turks (Muhammadans), Telís, and Tár-palms, these three make up Bihár.

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The Tirthas of Vrindā-vana and Gokula.—By F. S. GROWSE, M. A.,
B. C. S.

I. Vrindā'-vana.

Some six miles above Mathurā is a point where the right bank of the Jamunā assumes the appearance of a peninsula, owing to the eccentricity of the stream, which first makes an abrupt turn to the north and then as sudden a return upon its accustomed southern course. Here, washed on three of its sides by the sacred flood, stands the town of Brindā-ban, at the present day a rich and increasing municipality and for many centuries past one of the most holy places of the Hindūs. A little higher up the stream, a similar promontory occurs, and in both cases the curious formation is traditionally ascribed to the resentment of Baladeva. He, it is said, forgetful one day of his habitual reserve, and envious of his younger brother's popular graces, led out the Gopis for a dance upon the sands. But he performed his part so badly, that the Jamunā could not forbear from taunting him with his failure, and recommending him never again to exhibit so clumsy an imitation of Krishna's agile movements. The stalwart god was much vexed at this criticism and, taking up the heavy plough which he had but that moment laid aside, he drew with it so deep a furrow from the shore that the unfortunate river perforce fell into it, was drawn helplessly away and has never since been able to recover its original channel.

Such is the local rendering of the legend; but in the Purānas and other early Sanskrit authorities, the story is differently told, in this wise; that as Balarāma was roaming through the woods of Brindā-ban, he found concealed in the cleft of a *kadamb* tree some spirituous liquor, which he at once consumed with his usual avidity. Heated by intoxication he longed above all

things for a bathe in the river, and seeing the Jamunā at some little distance, he shouted for it to come near. The stream, however, remained deaf to his summons; whereupon the infuriated god took up his ploughshare and breaking down the bank drew the water into a new channel, and forced it to follow wherever he led. In the Bhāgavata it is added that the Jamunā is still to be seen following the course along which she was thus dragged. Professor Wilson in his edition of the Vishnu Purāṇa says, "The legend probably alludes to the construction of canals from the Jamunā for the purpose of irrigation; and the works of the Muhammadans in this way, which are well known, were no doubt preceded by similar canals dug by order of Hindū princes." Upon this suggestion, it may be remarked first that in Upper India no irrigation works of any extent are known ever to have been executed either by Hindūs or Muhammadans; certainly, there are no traces of any such operations in the neighbourhood of Brindā-ban; and secondly, both legends represent the Jamunā itself as diverted from its straight course into a single winding channel, not as divided into a multiplicity of streams. Hence it may more reasonably be inferred that the still existing involution of the river is the sole foundation for the myth.

Like most of the local names in the vicinity, the word Brindā-ban is derived from an obvious physical feature and, when first attached to the spot, signified no more than the "tulsi grove," *brindā* and *tulsi* being synonymous terms, used indifferently to denote the sacred aromatic herb, known to botanists as *Ocymum sanctum*.

But this explanation is far too simple to find favour with the more modern and extravagant school of Vaishnava sectaries; and in the Brahma Vaivanta Purāṇa, a mythical personage has been invented bearing the name of Vrindā. According to that spurious composition (Brah. Vai., v. iv. 2) the deified Rādhā, though inhabiting the Paradise of Goloka, was not exempt from human passions, and in a fit of jealousy condemned a Gopa by name Sṛidāna to descend upon earth in the form of the demon Sankhāchura. He in retaliation sentenced her to become a nymph of Brindā-ban; and there accordingly she was born, being as was supposed the daughter of Kedāra, but in reality the divine mistress of Krishna; and it was simply his love for her which induced the god to leave his solitary throne in heaven and become incarnate. Hence in the following exhaustive list of Rādhā's titles as given by the same authority (Brah. Vai., v. iv. 17) there are several which refer to her predilection for Brindā-ban:

*Radhī, Rasesvari, Rāsarāsini, Rāsikesvari,
Krishna-pranādhikā, Krishna-priya, Krishna-swarūpini,
Krishnā, Vrindāvanī, Vrindā, Vrindāvana-vinodini,
Chandāvatī, Chandra-kāntā, Sata-chandra-nibhānanā,
Krishna-vāmāṅga-sambhūtā, Paramānanda-rūpini.*

There is no reason to suppose that Brindā-ban was ever the seat of any large Buddhist establishment; and though from the very earliest period of Brahmanical history it has enjoyed high repute as a sacred place of pilgrimage, it is probable that for many centuries it was merely a wild uninhabited jungle, a description still applicable to Bhāndir-ban on the opposite side of the river, a spot of equal celebrity in Sanskrit literature. It was only about the middle of the sixteenth century after Christ that some holy men from other parts of India came and settled there and built a small shrine, which they dedicated to Brindā Devī. It is to their high reputation for sanctity that the town is primarily indebted for all that it now possesses. Its most ancient temples, four in number, take us back only to the reign of our own Queen Elizabeth; the stately courts that adorn the river bank and attest the wealth and magnificence of the Bharatpur Rājās, date only from the middle of last century; while the space now occupied by a series of the largest and most magnificent shrines ever erected in Upper India was fifty years ago an unclaimed belt of jungle and pasture-ground for cattle. Now that communication has been established with the remotest parts of India, every year sees some splendid addition made to the artistic treasures of the town; as wealthy devotees recognize in the stability of British rule an assurance that their pious donations will be completed in peace and remain undisturbed in perpetuity.

At the present time there are within the limits of the municipality about a thousand temples, including of course many which strictly speaking are merely private chapels, and fifty ghats constructed by as many Rājās. The peacocks and monkeys, with which the place abounds, enjoy the benefit of special endowments, bequeathed by deceased Princes of Kotā and Bharatpur. There are some fifty chhatras, or dole houses, for the distribution of alms, and extraordinary donations are not unfrequently made by royal and distinguished visitors. Thus the Rājā of Dātā, a few years ago, made an offering to every single shrine and every single Brahman that was found in the city. The latter order constitute a fourth of the whole population, which amounts to 21,000; while the Bairāgis and Vaishnavas also muster strong, being in all not less than 5000 or 6000. The Vaishnavas are of five schools or Sampradāyas, called respectively Śrī Vaishnava, Viṣṇu Swāmi (this is the predominant class at Gokul), Nīlākrāśa Vaishnava, and Mādhava Vaishnava. In the time of the emperors, the Muhammadans made a futile attempt to abolish the ancient name, Brinda-ban, and in its stead substitute that of Mūminābād; but now more wisely they leave the place to its own Hindū name and devices, and keep themselves as clear of it as possible. Thus, besides an occasional official, there are in Brinda-ban no followers of the prophet beyond only some fifty families who live close together in its outskirts, and are all of the humblest order, such as oilmen, lime-burners, and the like.

But, as said above, the foundation of all this material prosperity and religious exclusiveness was laid by the Gosāins who established themselves there in the reign of Akbar. The leaders of the community were by name Rūpa and Sanātana from Gaur in Bengal. They were accompanied by six others, of whom three, Jīva, Madhu and Gopal Bhat, came from the same neighbourhood, Swami Hari Dās from Rājpur in the Mathurā District, Hari bans from Deva-ban in Sahāranpur, and Byās Hari Rām from Orchā in Bundelkhand. It is said that, in 1570, the emperor was induced to pay them a visit, and was taken blindfold into the sacred enclosure of the Nidh-ban,* where such a marvellous vision was revealed to him, that he was fain to acknowledge the place as indeed holy ground. Hence the cordial support which he gave to the attendant Rajas, when they declared their intention of erecting a series of buildings more worthy of the local divinity.

The four temples, commenced in honour of this event, still remain, though in a ruinous and sadly neglected condition. They bear the titles of Gobind Deva, Gopī-nath, Jugal-kishor, and Madan Mohan. The first named is not only the finest of this particular series, but is the most impressive religious edifice that Hindū art has ever produced, at least in Upper India. The body of the building is in the form of a Greek cross, the nave being a hundred feet in length and the breadth across the transepts the same. The central compartment is surmounted by a dome of singularly graceful proportions; and the four arms of the cross are roofed by a waggon vault of pointed form, not—as is usual in Hindū architecture—composed of overlapping brackets, but constructed of true radiating arches as in our Gothic cathedrals. The walls have an average thickness of ten feet, and are pierced in two stages, the upper stage being a regular triforium, to which access is obtained by an internal staircase. At the east entrance of the nave, a small narthex projects fifteen feet; and at the west end, between two niches and incased in a rich canopy of sculpture, a square-headed doorway leads into the choir, a chamber some twenty feet deep. Beyond this was the sacarium, flanked on either side by a lateral chapel; each of these three cells being of the same dimensions as the choir and like it vaulted by a lofty dome. The general effect of the interior is not unlike that produced by St. Paul's cathedral in London. The latter building has greatly the advantage in size, but in the other, the central dome is more elegant, while the richer decoration of the wall surface and the natural glow of the red sandstone supply that relief and warmth of colouring which are so lamentably deficient in its Western rival.

* The derivation of this word is a little questionable. It is the local name of the actual Brindā grove, to which the town owes its origin. The spot so designated is now of very limited area, hemmed in on all sides by streets, but protected from further encroachment by a high masonry wall.

There must originally have been seven towers, one over the central dome, one at the end of each transept, and the other four covering respectively the choir, sacrarium and two chapels. The sacrarium has been utterly razed to the ground, and the other six towers levelled with the roof of the nave. Their loss has terribly marred the effect of the exterior, which must have been extremely majestic when the west front with its lofty triplet was supported on either side by the pyramidal mass of the transepts and backed by the still more towering height that crowned the central dome. The choir tower was of slighter elevation; occupying the same relative position as the spirelet over the sanctus bell in Western ecclesiology. The ponderous walls, albeit none too massive to resist the enormous thrust once brought to bear upon them, now, however much relieved by exuberant decoration, appear out of all proportion to the comparatively low superstructure. As a further disfigurement, a plain masonry wall has been run along the top of the centre dome. It is generally believed that this was built by Aurangzib for the purpose of desecrating the temple; though it is also said to have been put by the Hindús themselves to assist in some grand illumination. In either case it is an ugly modern excrescence, and steps should be at once taken for its removal.

Under one of the niches at the west end of the nave is a tablet with a long Sanskrit inscription. This has unfortunately been much mutilated, but enough remains as record of the fact that the temple was built in *Sambat* 1617, i. e., A. D. 1590, under the direction of the two Gurus Rūpa and Sanātana. The founder, Rājā Mān Siṅha, was a Kachhwāhī Thākur, son of Rājā Bhagawān Dās of Amber, founder of the temple at Gobardhan, and an ancestor of the present Rājā of Jaypur. He was appointed by Akbar successively Governor of the districts along the Indus, of Kābul, and of Bihār. By his exertions, the whole of Orisā and Eastern Bengal were reannexed; and so highly were his merits appreciated at court, that though a Hindú, he was raised to a higher rank than any other officer in the realm. He married a sister of Lakshmi Nārāyan, Rājā of Koch Bihār, and at the time of his decease, which was in the 9th year of the reign of Jahāngir, he had living one son, Bhāo Siṅha, who succeeded him upon the throne of Amber, and died in 1621, A. D.* There is a tradition to the effect that Akbar at the last, jealous of his powerful vassal, and desirous to rid himself of him, had a confection prepared, part of which contained poison; but caught in his own snare he presented the innocuous portion to the Rājā and ate that drugged with death himself. The unworthy deed is explained by Mān Siṅha's design, which apparently had reached the Emperor's ears, to alter the succession in favour of Khusrau, his nephew, instead of Salīm.†

* Vide Professor Blochmann's *Kin i Akbari*, p. 341.

† The above tradition is quoted from Tod's *Rājasthán*.

In anticipation of a visit from Aurangzib, the image of the god was transferred to Jaypur, and the Gosāin of the temple there has ever since been regarded as the head of the endowment. The name of the present incumbent is Syām Sundar, who has two agents resident at Brindā-ban. There is said to be still in existence at Jaypur the original plan of the temple, shewing its seven towers, but there is a difficulty in obtaining any definite information on the subject. However, local tradition is fully agreed as to their number and position; while their architectural character can be determined beyond a doubt by comparison with the smaller temples of the same age and style, the ruins of which still remain. It is therefore not a little strange that of all the architects who have described this famous building, not one has noticed this, its most characteristic feature: the harmonious combination of dome and spire is still quoted as the great crux of modern art, though nearly 300 years ago the difficulty was solved by the Hindūs with characteristic grace and ingenuity.

It is much to be regretted that this most interesting monument has not been declared national property and taken under the immediate protection of Government. At present no care whatever is shewn for its preservation: large trees are allowed to root themselves in the fissures of the walls, and in the course of a few more years the damage done will be irreparable. As a modern temple under the old dedication has been erected in the precincts, no religious prejudices would be offended by the state's appropriation of the ancient building. If any scruples were raised, the objectors might have the option of themselves undertaking the necessary repairs. But it is not probable that they would accept the latter alternative; for though the original endowment was very large, it has been considerably reduced by mismanagement, and the ordinary annual income is now estimated at no more than Rs. 17,500,* the whole of which is absorbed in the maintenance of the modern establishment.

The next temple to be described, *viz.* that of Madan Mohan, one of Krishna's innumerable titles, stands at the upper end of the town on the river-bank near the Kālī-mardan Ghāt, where the god trampled on the head of the great serpent Kālī. It consists of a nave 57 feet long, with a choir of 20 feet square at the west end, and a sanctuary of the same dimensions beyond. The total height of the nave would seem to have been only about 22 feet, but its vaulted roof has entirely disappeared: the upper part of the choir tower has also been destroyed. That surmounting the sacarium is a lofty octagon of curvilinear outline tapering towards the summit; and attached to its south side is a tower-crowned chapel of precisely similar elevation, and differing only in the one respect that its exterior surface is enriched with

* Of this sum only Rs. 1,500 are derived from land and house property; the balance of Rs. 13,000 is made up by votive offerings.

sculptured panels, while the other is quite plain. Over its single door, which is at the east end, is a Sanskrit inscription, given first in Bengali and then in Nāgari characters, which runs as follows :

हर इव गुरुवंशो यत्पिता रामचन्द्रो
गुणिसिखिरिव पुत्रो यस्य राधावसन्तः ।
सकृतसुकृतराशिः श्रीगुणानन्दनामा
व्यधितविधिवदेतन्मन्दिरं नन्दसूत्रोः ॥

The above, it is believed, has never been copied before. As the letters were raised, instead of incised, and also much worn, a transcript was a matter of some little difficulty ; and the Brahman in charge of the shrine declared the inscription to be absolutely illegible, or at least if the letters could be decyphered, quite unintelligible. The information it gives is certainly not very perspicuous, and there is no indication of a date ; but we are enabled to gather thus much that the chapel at all events was founded by a Guhavansa,* bearing the name of Guṇānand. The main building, which may possibly be a little older, is popularly ascribed to one Rām Dās, a Kshatriya of Multān. The court-yard is entered, after the ascent of a flight of steps, through a massive square gateway with a pyramidal tower, which groups very effectively with the two towers of the temple. As the buildings are not only in ruins, but also from peculiarities of style ill-adapted to modern requirements, they are seldom if ever used for religious service, which is ordinarily performed in an elegant and substantial edifice erected on the other side of the street under the shadow of the older fane. The annual income is estimated at Rs. 10,100 ; of which sum Rs. 8,000 are the voluntary offerings of the faithful, while only Rs. 2,100 are derived from permanent endowment. A branch establishment at Rādhā Kund with the same dedication is also supported from the funds of the parent house.

The temple of Gopināth, which may be slightly the earliest of the series, is said to have been built by Rāsil Jī, a progenitor of the Shaikhāwat branch of the Kachhwādrī Thākurs. This great Rājput family claim ultimate descent from Balojī, the third son of Raja Uday Karam, who succeeded to the throne of Amber in 1389, A. D. To Balojī fell by inheritance the district of Amritsar, and after him to his son Mokāl. This latter was long childless till through the blessing of the Muhammadan saint Shaikh Burhān, he became the father of a son called after his spiritual progenitor, Shaikh Jī. He is accounted the patriarch of all the Shaikhāwat race, who for more than four centuries have continued to observe the obligations originally contracted with him. At the birth of every male infant, a goat is sacrificed, and while the kalimah is recited, the child is sprinkled with the blood. He is invested with the baddhiya, or cross-strings, usually worn by little Muhammadans ;

* This word is a little questionable and may be read "Guruvansa,"

and when he laid them aside, he was bound to suspend them at the saint's dargāh still existing six miles from Achrol. For two years he wears a blue tunic and cap, and for life abstains from hog's flesh and all meat in which the blood remains. Shaikh Jī, by conquest from his neighbours, consolidated under his own sway 360 villages, in complete independence of the parent state of Amber: and they so continued till the time of Sawai Jay Sīnha, the founder of Jaypur. Shaikh Jī's heir Rācmal had three sons, Non-karan, Rācāl and Gopal. By the advice of Devi Dās, a shrewd minister, who had been dismissed by Non-Karan, Rācāl proceeded to Dīhlī with a following of 20 horse men, and so distinguished himself in the repulse of an Afghān invasion, that Akbar bestowed upon him the title of Darbārī with a grant of land and the important command of 1,250 horse. Khandelā and Udaypur, then called Kasumbi, which he conquered from the Narbhāns, a branch of the Chauhāns, after contracting a marriage with the daughter of the prince of that race, because the principal cities of the Shaikhāwat confederation. He accompanied his liege lord, Rājā Man Sīnha of Amber against the Mewār Rāna Pratāp, and further distinguished himself in the expedition to Kābul. The date of his death is not known.* The temple, of which he is the reputed founder, corresponds very closely both in style and dimensions with that of Madan Mohan already described; and has a similar chapel attached to the south side of the sacarium. It is, however, in a far more ruinous condition: the nave has entirely disappeared; the three towers have been levelled with the roof; and the entrance gateway of the court-yard is tottering to its fall. The special feature of the building is a curious arcade of three bracket arches, serving apparently no structural purpose, but merely added as an ornamental screen to the bare south wall. The choir-arch is also of handsome design, elaborately decorated with arabesque sculptures; but it is partly concealed from view by mean sheds which have been built up against it, while the interior is used as a stable and the north side is blocked by the modern temple. The votive offerings here made are estimated at Rs. 3,000 a year, in addition to which there is an endowment yielding an annual income of Rs. 1,200.

The temple of Jugal Kishor, the last of the old series, stands at the lower end of the town near the Kesi Ghāt. Its construction is referred to the year *Sambat* 1684, i. e. 1627 A. D., in the reign of Jahāngīr, and the founder's name is preserved as Non-Karan. He is said to have been a Chauhān Thākur; but it is not improbable that he was the elder brother of Rācāl, who built the temple of Gopinath. The choir, which is slightly larger than in the other examples, being 25 feet square, has the principal entrance, as usual, at the east end; but is peculiar in having also, both north

* The above particulars are extracted from Tod's *Rājasthān* and Professor Blochmann's *Āin i Akbarī*.

and south, a small doorway under a hood supported on eight closely-set brackets carved into the form of elephants. The nave has been completely destroyed. Three other temples, dedicated respectively to Rādhā Ballabh, Chīr Bihāri, and Rādhā Dāmodar, put forward claims to considerable antiquity; but, as buildings, they possess no special architectural merit. The same may be said of the Bengali temple of Śrīngār Baṭ, near the Madan Mohan, which, however, enjoys an annual income of Rs. 13,500, divided among three shareholders, who each take the religious services for four months at a time. The village of Jahangīrpur, on the opposite bank of the river, including the sacred grove of Bel-ban, forms part of the endowment.

Of the modern temples five claim special notice. The first in time of erection is the temple of Krishna Chandrama, built about the year 1810, at a cost of 25 lakhs, by the wealthy Bengali Kāyath, Krishan Chandra Siñha, better known as the Lala Bābu. It stands in a large court yard, which is laid out, not very tastefully, as a garden, and enclosed by a lofty wall of solid masonry, with an arched gateway at either end. The building is of quadrangular form, 160 feet in length, with a front central compartment of three arches and a lateral colonnade of five bays reaching back on either side towards the cella. The workmanship throughout is of excellent character, and the stone has been carefully selected. The two towers, or *sikharas*, are singularly plain; but have been wisely so designed, that their smooth polished surface may remain unsullied by rain and dust.

The founder's ancestor, Bābu Murli Mohan Siñha, son of one Har Krishna Siñha, was a wealthy merchant and landed proprietor at Kāndi in Murshidābād. His heir, Bihāri Lal Siñha, had three sons, Rādhā Gobind, Gangā Gobind, and Rādhā Charan: of these the last-named, on inheriting his share of the paternal estate, broke off connection with the rest of the family and has dropped out of sight. Rādhā Gobind took service under Allah Virdī Khān and Siraj-ud-daulah, Nawābs of Murshidābād, and was by them promoted to posts of high honour. A rest-house for travellers and a temple of Rādhā-ballabh which he founded, are still in existence. He died without issue, leaving his property to his brother, Gangā Gobind, who took a prominent part in the revision of the Bengal settlement under Lord Wm. Bentinck in 1828. He built a number of dharmasālas for the reception of pilgrims and four temples at Rāmechandrapur in Nadiyā. These latter have all been washed away by the river, but the images of the gods were transferred to Kāndi. He also maintained several Sanskrit schools in Nadiyā; and distinguished himself by the extraordinary pomp with which he celebrated his father's obsequies, spending moreover every year on the anniversary of his death a lakh of rupees in religious observances. Gangā Gobind's son, Prān Kishan Siñha, still further augmented his magnificent patrimony before it passed in succession to his son, Krishan Chandra Siñha, better known under the sobriquet of 'the

Lalā Bābū. He held office first in Bardwān and then in Orisā, and when about thirty years of age, came to settle in the holy land of Braj. In connexion with his temple at Brindā-ban he founded also a rest-house, where a large number of pilgrims are still daily fed; the annual cost of the whole establishment being, as is stated, Rs. 22,000. He also enclosed the sacred tanks at Radha-kund with handsome ghats and terraces of stone at the cost of a lākh. When some forty years of age, he renounced the world, and in the character of a Bairāgi continued for two years to wander about the woods and plains of Braj, begging his bread from day to day till the time of his death, which was accidentally caused by the kick of a horse at Gobardhan. He was frequently accompanied in his rambles by Mani Rām, father of the famous Seth Lakhmi Chand, who also had adopted the life of an ascetic. In the course of the ten years which the Lalā Bābū spent as a worldling in the Mathurā district, he contrived to buy up all the villages most noted as places of pilgrimage in a manner which strikingly illustrates his hereditary capacity for business. The zamīndārs were assured that he had no pecuniary object in view, but only the strict preservation of the hallowed spots. Again, as in the days of Krishna, they would become the secluded haunts of the monkey and the peacock, while the former proprietors would remain undisturbed, the happy guardians of so many new Arcadias. Thus the wise man from the East picked up one estate after another at a price in every case far below the real value, and in some cases for a purely nominal sum. However binding his fair promises may have been on the conscience of the pious Bābū, they were never recorded on paper, and therefore are naturally ignored by his absentee descendants and their agents, from whom any appeal *ad misericordiam* on the part of the impoverished representatives of the old owners of the soil meets with very scant consideration. The villages which he acquired in the Mathurā district are fourteen in number, viz., in the Kosi Parganah, Jan; in Chhātā, Nandganw, Barsāna, Sanket, Karhela, and Hāthiya; and in the home Parganah, Mathurā, Jait, Maholi and Nabī-pur, all these, except the last, being more or less places of pilgrimage. He also acquired by purchase from the Gūjars the five villages of Pīrpur, Gulālpur, Chamar-gerhī and Dūmri. For Nand-gānw he gave Rs. 900; for Barsāna, Rs. 600; for Sanket, Rs. 800; and for Karhela, Rs. 500; the annual revenue derived from these places being now as follows; from Nandganw, Rs. 6,712; from Barsāna, Rs. 3,109; from Sanket, Rs. 1,612; and from Karhela, Rs. 1,900. It may also be noted that payment was invariably made in Brindā-ban rupees, which are worth only 13 or 14 annas each. The Bābū further purchased seventy-two villages in Aligarh and Balandshahr from Rājā Bīr Sīnha, Chauhan; but twelve of these were sold at auction in the time of his heir, Bābū Śrī Nārāyan Sīnha. This latter, being a minor at his father's death, remained for a time under the tutelage of his mother, the Rānī Kai-

tāni, who again, on his decease when only thirty years old, managed the estate till the coming of age of the two sons whom his widows had been specially authorized to adopt. The elder of the two, Pratāp Chandra, founded an English school at Kāndi and Dispensary at Calcutta. He was for some time a Member of the Legislative Council of Bengal, received from Government the title of Bahādur, and was enrolled as a Companion of the Star of India. He died in 1867; his brother Isvarelandra in 1863. The latter left, one son, Indrachand, who with his three cousins, Pūrān-chandra, Kāri-chandra, and Saral-chandra, the sons of Pratāp-chandra, are the present owners of the estate, which, during their minority is under the control of the Court of Wards, the General Manager being Mr. Robert Harvey of Calcutta.

The great temple, founded by Seth Gobind Dās and Rādhā Krishan, brothers of the famous millionaire Lakhmi Chand, is dedicated to Rang Jī, a Dakhani title of Vishnu. It is built in the Madras style, in accordance with plans supplied by their guru, the great Sanskrit scholar, Śrī Śrī Rāngā-chāri, a native of that part of India, who still presides over the magnificent establishment. The works were commenced in 1845 and completed in 1851, at a cost of 45 lakhs of Rupees. The outer walls measure 773 feet in length by 440 in breadth, and enclose a fine tank and garden in addition to the actual temple-court. This latter has lofty gate-towers, or *gopuras*, covered with a profusion of coarse sculpture. In front of the god is erected a pillar, or *dhvajastha stambha*, of copper gilt, sixty feet in height and also sunk some twenty-four feet more below the surface of the ground. This alone cost Rs. 10,000. The principal or western entrance of the outer court is surmounted by a pavilion, ninety-three feet high, constructed in the Mathurā style after the design of a native artist. In its graceful outlines and the elegance of its reticulated tracery, it presents a striking contrast to the heavy and misshapen masses of the Madras Gopura, which rises immediately in front of it. A little to one side of the entrance is a detached shed, in which the god's *rath*, or carriage, is kept. It is an enormous wooden tower in several stages, with monstrous effigies at the corners, and is brought out only once a year in the month of Chait during the festival of the Brahmotsav. The meli lasts for ten days, on each of which the god is taken in state from the temple along the road a distance of 690 yards to a garden where a pavilion has been erected for his reception. The procession is always attended with torches, music, and incense, and some military display contributed by the Rājā of Bharatpur; and on the closing day, when only the rath is used, there is a grand show of fireworks, which people of all classes congregate from long distances to see. The image, composed of the eight metals, is seated in the centre of the car, with attendant Brahmans standing beside to fan it with chauries. Each of the Seths, with the rest of

the throng, gives an occasional hand to the ropes by which the ponderous machine is drawn; and by dint of much exertion, the distance is ordinarily accomplished in the space of about two and a half hours. On the other days of the melā the god has a wide choice of vehicles, being borne now on a paliki, a richly gilt tabernacle (*punya-kothi*), a throne (*sinhāsan*), or a tree, either the kadamb, or the tree of Paradise (*kalpariksha*), now on some demi-god, as the sun or the moon, Garúra, Hanumán, or Sesha; now again on some animal, as a horse, an elephant, a lion, a swan, or the fabulous eight-footed *Sarabha*. The ordinary cost of one of these celebrations is over Rs. 20,000, while the annual expenses of the whole establishment amount to no less than Rs. 57,000, the largest item in that total being Rs. 30,000 for the religious services or *bhag*. Every day 500 of the Sri Vaishnava seet are fed at the temple, and every morning up to 10 o'clock a dole of átá is given to any one who chooses to apply for it.

If the effect of the Seth's lavish endowment is impaired by the ill-judged adoption of a foreign style of architecture; still more is this error apparent in the temple of Rádha Raman, completed within the last few years. The founder is Sah Kundan Lal of Lucknow, who has built on a design suggested by the modern secular buildings of that city. The principal entrance to the court yard is, in a grandiose way, decidedly effective; and the temple itself is constructed of the most costly materials and fronted with a colonnade of spiral marble pillars, each shaft being of a single piece, which though rather too attenuated, is unquestionably elegant. The mechanical execution is also good, but all is rendered of no avail by the abominable taste of the design. The façade with its uncouth pediment, flanked by sprawling monsters, and its row of life-size female figures in meretricious but at the same time most ungraceful attitudes, resembles nothing so much as a disreputable London casino; a severe, though unintended, satire on the character of the divinity to whom it is consecrated. Ten lákhs of rupees are said to have been wasted on its construction.

In striking contrast to this tasteless edifice is the temple of Rádha Indra Kishor, built by Ráni Indrajit Kunwar, widow of Het Rám, Bráhmaṇ, zamindár of Tikári by Gayá. It has been six years in building, and was completed at the end of 1871. It is a square of seventy feet divided into three aisles of five bays each, with a fourth space of equal dimensions for the reception of the god. The *silkhara* is surmounted with a copper *kalas*, or finial, heavily gilt, which alone cost Rs. 5000. The piers are composed of four conjoined pillars, each shaft being a single piece of stone, brought from the Pakárpur quarry in Bharatpur territory. The building is raised on a high and enriched plinth, and the entire design is singularly light and graceful. Its cost has been three lákhs.

The temple of Rádha Gopál, built by the Mahárāja of Gwaliár, under

the direction of his guru Brahmachāri Gīri-dhāri Das is also entitled to some special notice. The interior is an exact counterpart of an Italian church, and would be an excellent model for our architects to follow, since it secures to perfection both free ventilation and a softened light. It consists of a nave 58 feet long, with four aisles, two on either side, a sacarium 21 feet in depth and a narthex of the same dimensions at the entrance. The outer aisles of the nave, instead of being closed in with solid walls, have open arches stopped only with wooden bars; and the tier of windows above gives on to a balcony and verandah. Thus any glare of light is impossible. The building was opened for religious service in 1860, and as it stands has cost four lakhs of rupees. The exterior has a mean and unsightly appearance, which might be obviated by the substitution of reticulated stone tracery for the wooden bars of the outer arches below and a more substantial balcony and verandah in lieu of the present rickety erection above.

There are in Brindā-ban no secular buildings of any great antiquity. The oldest is the court, or Ghēra, as it is called, of Sawāi Jay Sīnha, the founder of Jaypur, who made Brindā-ban an occasional residence during the time that he was Governor of the Province of Agrah (1721-1728). It is a large walled enclosure with a pavilion at one end consisting of two aisles divided into five bays by piers of coupled columns of red sandstone. The river front of the town has a succession of ghāts reaching for a distance of about a mile and half; the one highest up the stream being the Kālī-mardan Ghāt with the kadamb tree from which Krishna plunged into the water to encounter the great serpent Kālīya; and at the other end Kesi Ghāt, where he slew the equine demon of that name. Near the latter are two handsome mansions built by the Rānis Kishori and Lachhmi, consorts of Ranjīt Sīnha and Randhīr Sīnha, two successive Rājās of Bharatpur. In both, the arrangement is identical with that of a mediæval college, carried out on a miniature scale but with extreme elaboration of detail. The buildings are disposed in the form of a quadrangle, with an enriched gateway in the centre of one front and opposite it the chapel, of more imposing elevation than the ordinary domestic apartments which constitute the two flanks of the square. In Rāni Lachhmi's *kunj*, (such being the distinctive name for a building of this character) the temple front is a very rich and graceful composition, with a colonnade of five arches standing on a high plinth, which like every part of the wall surface is covered with the most delicate carving, and shaded above by overhanging eaves supported on bold brackets. The work of the elder Rāni is of much plainer character; and a third *kunj*, which stands a little lower down the river, close to the temple of Dhīr Samir, built by Thākur Badan Sīnha, the father of Sūraj Mal, the first of the Bharatpur Rājās, though large, has no architectural pretensions whatever. The most striking

of the whole series is, however, the Gangā Mohan Kunj, built in the next generation by Gangā, Sūraj Mal's Rāni. The river front, which is all that was ever completed, has a high and massive basement story, which, on the land side as seen from the interior of the court, becomes a mere plinth for the support of a majestic double cloister with broad and lofty arch and massive clustered pier. The style is precisely the same as that which prevails in the Garden Palace at Dīg, a work of the same chief; who, however rude and uncultured himself, appears to have been able to appreciate and command the services of the highest available talent whether in the arts of war or peace.

2. Gokula.

The town of Mahā-ban is some five or six miles from Mathurā, lower down the stream and on the opposite bank of the Jamunā. It stands a little in land, about a mile distant from Gokul, which latter place has appropriated the more famous name, though it is in reality only the modern water side suburb of the ancient town. All the traditional sites of Krishna's adventures, described in the Puranas as being at Gokul, are shewn at Mahā-ban, which in short is the place intended whenever Gokul is mentioned in Sanskrit literature. However, in consequence of its retaining the more famous name, Gokul is popularly credited with a far greater amount of sanctity. From the opposite side of the river it has a very picturesque appearance; but on nearer approach its tortuous streets are found to be inconceivably mean, crowded, and unsavoury, in the rains mere channels for the floods, which pour down through them to the Jamunā, and at all other times of the year so rough and broken by the action of the water, that the rudest wheeled vehicle can with difficulty make its way along them. Strenuous efforts have been made within the last few years to improve its sanitation, but the Gosāin Mu'āfidārs, the descendants (through his only son Bīṭhal-nāth) of the famous Vallabhāchāraj, who settled there in *Sambat* 1535, are most impracticable and intolerant of reform. The filthy condition of the place is largely owing to the enormous number of cattle driven within its walls every night, which render it really what the name denotes 'a cow-stall,' rather than a human habitation. The temples amount to a prodigious number, but they are all mean in appearance and recent in date; and the only noteworthy ornament of the town is a large masonry tank constructed some thirty years ago by a Seth, named Chumna.

The trees on its margin are always white with flocks of large water-fowl, of a quite distinct species from any to be found elsewhere in the neighbourhood. They are a new colony, being all descended from a few pairs which casually settled there no more than 10 or 12 years ago. Their plumage is peculiar and ornamental, but difficult to obtain, as the birds are considered

to enjoy the benefit of sanctuary; and on one occasion when a party of soldiers from the Mathurá cantonments attempted to shoot some of them, the towns people rose *en masse* for their protection.

Mahá-ban, the true Gokul, is by legend closely connected with Mathurá; for Krishna was born at the one and cradled at the other. Both, too, make their first appearance in history together and under most unfortunate circumstances as sacked by Mahmūd of Ghazni in the year 1017, A.D. From the effects of this catastrophe, it would seem that Mahá-ban was never able to recover itself. It is casually mentioned in connection with the year 1234 A. D., by Minháj i Sirāj, a contemporary writer, as one of the gathering-places for the imperial army sent by Shams ud-dīn against Kālinjar; and the Emperor Bábar, in his Memoirs, incidentally refers to it, as if it were a place of some importance still, in the year 1526, A. D.; but the name occurs in the pages of no other chronicle; and at the present day, though it is the seat of a Tahsili, it can scarcely be called more than a considerable village. Within the last few years one or two large and handsome private residences have been built with fronts of carved stone in the Mathurá style; but the temples are all exceedingly mean and of no antiquity. The largest and also the most sacred is that dedicated to Mathurá-nāth, which boasts of a pyramidal tower, or *sikhara*, of some height and bulk, but constructed only of brick and plaster. The Bráhmaṇ in charge used to enjoy an endowment of Rs. 2 a day, the gift of Sindhia, but this has long lapsed. There are two other small shrines of some interest: in the one the demon Trināvart is represented as a pair of enormous wings overhanging the infant god; the other bears the dedication of Mahá Mall Rāe, the great champion Prince, a title given to Krishna after his discomfiture of the various evil spirits sent against him by Kansa.

Great part of the town is occupied by a high hill, partly natural and partly artificial, extending over more than 100 bighas of land, where stood the old fort. Upon its most elevated point is shewn a small cell, called Syām Lāla, believed to mark the spot where Jasodā gave birth to Maya, or Joga-nidra, substituted by Vasudeva for the infant Krishna. But by far the most interesting building is a covered court called Nandas Palace, or more commonly the Assi Khamba, *i. e.* the Eighty Pillars. It is divided by five rows of sixteen pillars each into four aisles, or rather into a centre and two narrower side aisles with one broad outer cloister. The external pillars of this outer cloister are each of one massive shaft, cut into many narrow facets, with two horizontal bands of carving: the capitals are decorated either with grotesque heads or the usual four squat figures. The pillars of the inner aisles vary much in design, some being exceedingly plain and others as richly ornamented with profuse and often graceful arabesques. Three of the more elaborate are called respectively the Satya,

Dwápar, and Treta Yug ; while the name of the Kali Yug is given to another somewhat plainer. All these interior pillars, however, agree in consisting as it were of two short columns set one upon the other. The style is precisely similar to that of the Hindú colonnades by the Qutb Minár at Delhi ; and both works may reasonably be referred to about the same age. As it is probable that the latter were not built in the years immediately preceding the fall of Delhi in 1194, so also it would seem that the court at Mahá-ban must have been completed before the assault of Mahmúd in 1017 ; for after that date the place was too insignificant to be selected as the site of so elaborate an edifice. Thus Fergusson's conjecture is confirmed that the Delhi pillars are to be ascribed to the ninth or tenth century. Another long-mooted point may also be considered as almost definitely set at rest, for it can scarcely be doubted that the pillars as they now stand at Mahá-ban occupy their original position. Fergusson, who was unaware of their existence, in his notice of the Delhi cloister, doubts whether it now stands as originally arranged by the Hindús, or whether it had been taken down and re-arranged by the conquerors ; but concludes as most probable that the former was the case, and that it was an open colonnade surrounding the Palace of Prithi Ráj. " If so," he adds, " it is the only instance known of Hindú pillars being left undisturbed." General Cunningham comments upon these remarks, finding it utterly incredible that any architect, designing an original building and wishing to obtain height, should have recourse to such a rude expedient as constructing two distinct pillars, and then without any disguise piling up one on the top of the other. But, however extraordinary the procedure, it is clear that this is what was done at Mahá-ban, as is proved by the outer row of columns, which are each of one unbroken shaft, yet precisely the same in height as the double pillars of the inner aisles. The roof is flat and perfectly plain except in two compartments, where it is cut into a pretty quasi-dome of concentric multifoil circles. Mothers come here for their purification on the sixth day after child-birth—*chhatthi púja*—and it is visited by enormous crowds of people for several days about the anniversary of Krishna's birth in the month of Bhádon. A representation of the infant god's cradle is displayed to view, with his foster-mother's churn and other domestic articles. The place being regarded not exactly as a temple, but as Nanda and Jasoda's actual dwelling-house, Europeans are allowed to walk about in it with perfect freedom. Considering the size, the antiquity, the artistic excellence, the exceptional archaeological interest, the celebrity amongst natives, and the close proximity to Mathurá of this building, it is perfectly marvellous that it found no mention whatever in the archaeological abstract prepared in every district by orders of Government a few years ago, nor even in the costly work compiled by Lieut. Cole, the Superintendent of the Archaeological Survey, which professes to illustrate the architectural antiquities of Mathurá and its neighbourhood.

Let into the outer wall of the Nand Bhavan is a small figure of Buddha; and it is said that whenever foundations are sunk within the precincts of the fort, many fragments of sculpture—of Buddhist character, it may be presumed—have been brought to light: but hitherto they have always been buried again, or broken up as building materials. Doubtless, Mahā-ban was the site of some of those Buddhist monasteries, which the Chinese pilgrim Fa Hian distinctly states existed in his time on both sides of the river. And further, whatever may be the exact Indian word concealed under the form Klisoboras, or Clisobora, given by Arrian and Pliny as the name of the town between which and Mathura the Jamunā flowed—*Anteis Jomantes in Gangem per Palibothros decurrit inter oppida Methora et Clisobora*, Pliny, Hist. Nat. vi, 22—it may be concluded with certainty that Mahā-ban is the site intended. Its other literary names are Brihad-vana, Brihad-avanaya, Gokula, and Nanda-grāma; and no one of these, it is true, in the slightest resembles the word Clisobora, which would seem rather to be a corruption of some compound in which 'Krishna' was the first element, possibly some epithet or descriptive title taken by the foreign traveller for the ordinary proper name. General Cunningham in his 'Ancient Geography' identifies Clisobora (read in one MS., as 'Crisoborka') with Brindā-ban, assuming that Kalikavartta, or 'Kalika's Whirlpool,' was an earlier name of the town, in allusion to Krishna's combat with the serpent Kālīka. But in the first place, the Jamunā does not flow *between* Mathurā and Brindā-ban, seeing that both are on the same bank; secondly, the ordinary name of the great serpent is not Kālīka, but Kaliya; and thirdly, it does not appear upon what authority it is so boldly stated that "the earlier name of the place was Kālīka-vartta." Upon this latter point, a reference has been made to the great Brindā-ban Pandit, Swāmi Rangachāri, who if any one might be expected to speak with positive knowledge, and his reply was that in the course of all his reading, he had never met with Brinda-ban under any other name than that which it now bears. In order to establish the identification of Clisobora with Mahā-ban, it was necessary to notice General Cunningham's counter theory and to condemn it as unsound; ordinarily the accuracy of his research and the soundness of his judgment are entitled to the highest respect.

The glories of Mahā-ban are told in a special (interpolated) section of the Brahmanda Purāṇa, called the Brihad-vana Mahātmya. In this, its *tirthas*, or holy places, are reckoned to be twenty-one in number as follows:

Ēka-vinsati-tirthena yuktam bhūriguṇavaritam.

Yamal-ārjuna pūyatam, Nanda-kūpam tathaiva cha,

Chintā-harṇam Brāhmaṇḍam, kuṇḍam Sarasvatam tatha,

Sarasvatī śilā tatra, Viṣṇu-kuṇḍa-samavaritam,

Karna-kūpam, Krishna-kuṇḍam, Gopa-kēpam tathaiva cha,

*Ramanam-ramana-sthānam, Nārada-sthānam eva cha,
 Pūtana-pātana sthānam, Trināvaritākhyā pātanam,
 Nanda-harmyam, Nanda-geham, Ghāṭam Rāmana-samjñakam,
 Mathurānāthobha-kshetram punyam pāpa-praśasanam,
 Janna-sthānam tu Sheshasya, jananam Yogamāyaya.*

Some little distance outside the town, a small bridge carries the Mathurā road across a ravine called Pūtanaī khār, the Putanā-pātana-sthānam of the above lines. It is a mile or more in length, reaching down to the bank of the Jamunā, and as the name denotes, is supposed to have been caused by the passage of Putanā's giant body. Similarly in Mathura, when Kansa's corse was dragged down to the Visrānt Ghāṭ, it made a deep channel in the ground like a torrent in flood, as described in the Vishnu Purana :

*Gauravenāti mahatā parikhī tena krishyatā
 Kṛitā Kansasya dehena, vegeneva mahāmbhasah.*

This is still known as the Kans Khār. It has been arched over, and like the Fleet Ditch in London, forms now the main sewer of the city, discharging itself into the river at the very spot where Brāhmins most delight to bathe. The remainder of the twenty-one tirthas have either been already noticed in the course of this sketch, or commemorate such well-known incidents in Krishna's childhood that any further explanation is unnecessary.

On the high road to Saḍābād, some six miles beyond Mahā-ban, is the modern tirtha of Baladeva Jī. The temple, from which the town derives its name, is of considerable celebrity and well-endowed, but neither handsome nor well kept. It includes within its precincts several cloistered quadrangles, where accommodation is provided for pilgrims and the resident priests. The actual temple stands at the back of one of the inner courts, and on each of its three disengaged sides has an arcade of three arches with broad flanking piers. On each of these three sides a door gives access to the cella, which is surmounted by a squat pyramidal tower. Beside the principal figure, Baladeva, who is generally very richly dressed and bedizened, it contains another life-sized statue supposed to represent his spouse, Revati. Apparently she was an after-thought, being put away in a corner off the dais. In an adjoining court is shewn the small vaulted chamber, which is said to have been the original shrine before the present more pretentious edifice was erected by a Delhi Seth, named Syām Dās, some time in the last century. Outside the temple is a brick tank about eighty yards square, called variously Kshīr-Sāgar, 'the sea of milk,' or Kshīr-kund, or Balbhadrakund. It is in rather a dilapidated condition, and the surface of the water is always covered with a repulsive thick green scum, which, however, does not deter the pilgrims either from bathing or drinking. In this tank it is said that about the year 1550 was accidentally discovered the image of Baladeva which has ever since been regarded as the local divinity. The original

village, called Rirā, still exists as a hamlet of the modern town. It belonged to a family of Jāts; but their estate was transferred by sale to the temple Pāndas, who also enjoy an endowment of four other villages rent free, a grant from Sindhia. They are all descendants of the Bairāgi by whom the image was produced, and are by caste Ahivāsis, a singularly low and illiterate pseudo-Brahmanical tribe, who as it would seem are not known in any part of India beyond the Mathura district. The name is said to be derived from the great serpent (*ahi*) kāliya, and they represent the village of San-rakh, near the Kali-mardan Ghaṭ at Brindā-ban, as their first home.

Note—The interesting temple of Hari-deva at Gobardhan was in perfect preservation, excepting only the loss of its two towers, till the end of the year 1871. The roof of the nave then began to give away, and now has entirely fallen in, all save one compartment, which happily remains as a guide to the architect, in case a restoration should be undertaken. Funds for the work are not altogether wanting, as there is now in the local treasury a deposit of more than Rs. 3000 available for the purpose. This sum arises from the rents of the mu'afi village of Bhagosa, a permanent endowment, with regard to which, after long dispute, the Civil Court has decided that it must be expended strictly on the maintenance of the temple and its services, and cannot be appropriated by the shareholders to their own private uses. It could not be devoted to a better purpose than the repair of the fabric; and in case of want of unanimity among the shareholders a further order of the Court to that effect is all that is required.

On a new king of Bengal (Alāuddīn Firūz Shāh), and notes on the Husaini kings of Bengal and their conquest of Chātayān (Chittagong).
—By H. BLOCHMANN, M. A., *Calcutta Madrasah.*

Some time ago, Mr. Walter M. Bourke sent me two Arabic and Persian Inscriptions from Kalnah, on the Bhagirathī, one from a ruined mosque, and the other from the Dargāh of a saint of the name of Shāh Majlis. The latter inscription has not been deciphered, the stone being worn away; but the name of Husain Shāh was legible. The former, of which a yellowish impression had been taken, revealed the name of a new king. It was, however, too unclear to admit of more than a tentative reading, and I was fortunate to obtain, in June last, two clear black impressions. The stone of this valuable inscription, I am informed, lies on the ground in front of a ruined mosque, and is, like all inscriptions in this part of the country, of black basalt. The mosque, called the 'Shāhī Masjid,' lies outside Kalnah, about half a mile from the river, and is overgrown with jungle. Occasionally prayers are read in it, and the *Khūdins* in charge hold a few highahs of land. The Dargāh, mentioned above, is called 'Shāh Majlis Astānah,' lies also near the river, and is said to be under the Mutawalliship of the Mahārājah

of Bardwán. It consists of a vault and a masjid, and is frequented by numerous pilgrims. The only information regarding Shah Majlis (an Afghán name) is that he fought with the Hindús and died a martyr,—a legend repeated in almost every Astánah in Lower Bengal.

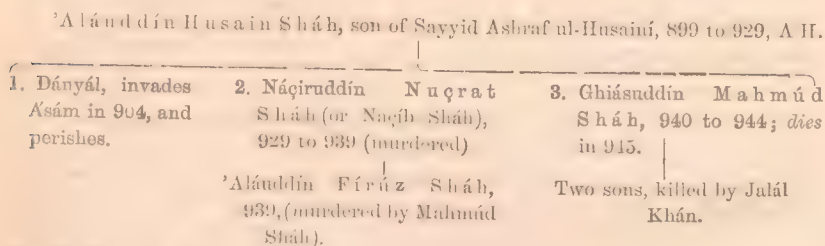
The inscription is—

بني هذا المسجد الجامع في زمن الملك العادل علاؤ الدنيا والدين ابو المعظفر
فيروز شاه السلطان بن نصره شاه السلطان خلد ملكه و سلطانه بنا كرده ملك المعظم
والمكرم الغمسنه خان ملك سرلشكرو وزير سامه الله في الدارين مؤرخا في الغرة
من شهر المبارك رمضان سنة تسع وثلاثين وتسعمائة ۱۱

This Jami' Mosque was built in the time of the just king 'Aláuddunyá waddín Abul Muzaffar Fírúz Sháh, the king, son of Nuqrát Sháh, the king—may God perpetuate his kingdom and rule! Erected by the great and generous Malik, Ulugh Masnad Khán Malik, commander and Vazír,—may God preserve him in both worlds! Dated, 1st day of the blessed month of Ramazán, 939, [27th March, 1533].

This important inscription proves the existence of a new king, and helps us to correct the histories as far as the death of Nuqrát Sháh is concerned. A few other valuable inscriptions of kings of the same dynasty having been received by the Asiatic Society, I have used the opportunity to put them together, and append a few notes on the chronology of the reigns of Husain Sháh and his descendants. As they are Sayyids, they may be conveniently called 'the Husainí Dynasty.'

Anticipating the results arrived at below, we have the following genealogical tree—



Mr. E. Thomas (Useful Tables, p. 312) has—

A.H.	A.D.	
897	1491	Fírúz Sháh Habshí.
899	1494	Mahmúd Shah, son of Fírúz Sháh.
901	1495	Muzaffar Sháh Habshí.
903	1498	'Aláuddín Husain Sháh, son of Sayyid Ashraf.
927	1521	Nuqrát Sháh, son of Husain Sháh.
940	1534	Mahmúd Sháh, son of Husain Sháh.
944	1537	Shér Shah

In order to explain the discrepancies between the above tree and the years given in Prinsep and all other histories, I shall take the kings singly.

1. 'Aláuddín Husain Sháh. I have fixed 899 A. H. as the first year of his reign, on the testimony of Marsden's coin (Marsden, p. 576), and I extend it to the beginning of 929. The year 903, given by Prinsep, has been obtained by adding the years assigned by the *Tabaqát i Akbari* and *Firishtah* to Firúz Shah Hahshi's successors, of whom Mahmaúd Sháh is said to have reigned 1 year, and Muzaffar Sháh 3 years 5 months.

Firishtah says, Husain Sháh died in 927, after a reign of 27 years,—so at least in the Lucknow edition, and in the Society's MS. of the *Riyáz-ussaláfin*, from which Stewart compiled his 'History of Bengal.' The *Riyáz* adds that the length of Husain Sháh's reign is variously given at 24, 27, and 29 years 5 months. Of these three statements, Stewart and Prinsep have taken the first (24 years, from 903 to 927). Firishtah counts 27 years, *i. e.* from 900 to 927. The *Tabaqát* seems to take the last (29 years 5 months); for it says that Husain Shah died in 929 A. H.* I do not know from which source the *Riyáz* has taken the "29 years 5 months."

Of several unpublished inscriptions of this king, I select the following, which General Cunningham found in Sunnárgáon—

قال الله تعالى انما يعمر مساجد الله من آمن بالله واليوم الآخر و اقام الصلوة
و آتي الزكوة و لم يخش الا الله فعسى اولئك ان يكونوا من المهتدين - قال الديني
صلي الله عليه وسلم من بني مسجد في الدنيا بني الله له سبعين قصرا في الجنة -
بني هذا المسجد في عهد السلطان (sic) الزمان وارث الملك سليمان علاؤ الدنيا
و الدين ابو مظفر حسين شاه سلطان خلد الله ملكه و سلطانه و اعلى امره و شأنه
و اظفر كل لحظة برهانه الخان الاعظم و المعظم اعني خواصخان سولشكر زمين تبورة
و وزير اقليم معظما بان مسلمة الله في الدارين مؤرخا في الثاني من ربيع الآخر سنة
تسع عشر و تسعمائة ||

God Almighty says, 'Surely he will build the mosques of God who believes in God and the last day, and who establishes prayer and gives the legal alms, and fears no one except God. Such perhaps shall belong to those that are guided' [Qurán, lxi, 13]. The prophet—may God bless him!—has said, 'He who builds a mosque in this world, shall have seventy castles built for him by God in paradise.'

This mosque was built in the reign of the Sultan of the age, the heir of the kingdom of Solomon, 'Aláuddunyá waddín Abul Muzaffar Husain Sháh—May God perpetuate his kingdom and rule, and elevate his condition and dignity, and render, in every minute, his proof victorious!—by the great and noble

* MS. 87 of the Asiatic Society's Library, p. 1164. There are two misprints on this very point in the quarto and octavo editions of Stewart's History of Bengal. In the Tables prefixed to the work, 903 is mentioned as the year of Husain Shah's accession; and in Sect. iv, (pp. 109 and 71, resp.), the margin gives A. D. 1489, for 1498.

Khán, namely Khawáq Khán, governor of the Land of Tipúrah and Vazír of the District Mu'aazzamábád,—may God preserve him in both worlds! Dated, 2nd Rabi' II, 919. [7th June, 1513.]

The inscription contains the phrase *Iql'im Mu'azzamábád*, which Mr. Thomas discusses in his 'Chronicles of the Pathan Kings,' p. 153. The union of Tripurah (Tiparah) and Mu'azzamábád confirms my conjecture that Mu'azzamabad belongs to Sumnargáon. The form *تپور* is intended to be Arabic for *تیور*.

The various statements regarding the beginning of Husain Shah's reign are, no doubt, due to the fact that he was a usurper, and that his power, therefore, extended gradually. One source, indeed, makes him murder Muzaffar in his palace; but other sources speak of a great struggle, ending in a great battle under the walls of Gaur, when Husain Shah was victorious.

Another proof for the correctness of the year 929 lies in the fact that the Tabaqát assigns to Nugrat Sháh only eleven years as reigning king.

There is some confusion regarding the real name of Husain Sháh. The Tabaqát merely calls him 'Aláuddin, the julus-name, whilst Firishtah calls him Sayyid Sharif i Makki, *i. e.* Sharif from Makkah; and Stewart gives "Sherief Mecca," evidently confirmed by a gratuitous remark of the author of the *Riyázussaláfin*, who, as he says, *thinks* that Husain's father, or one of his ancestors, might perhaps have been a Sharif of Mecca!* To make the confusion greater, the *Riyáz* adds that he had seen "in some pamphlet that Husain Sháh and his brother Yúsuf had come with their father Sayyid Ashraf Husain from Tirmiz in Turkistán, and having accidentally come to Bengal they had settled in the Rárah District at Chándpúr, where they studied under the Qízi of the place. When the Qízi had convinced himself of the nobility of their descent, he gave his daughter to Husain in marriage, and introduced him at the court of Muzaffar Sháh, who made him Vazir." None of the numerous inscriptions and coins of Husain Sháh call him Sayyid Sharif or "Makki."

Prince Danyál. He is mentioned by Badáoní (I, 317) as having met Sultán Sikandar Lodí as ambassador from his father Husain Sháh, near the town of Bihar, in 901 A. H. This is another and independent testimony shewing that Husain's reign commenced before 903 A. H., and that he was, in fact, fully established in 901.

Danyál is also mentioned in the following inscription which I owe to the kindness of Maulawi 'Abdul Jabbár, Deputy Magistrate, Munger. The inscription is attached to the eastern wall of the Dargah of Sháh Nafah,

* The Sharif, or ruler, of Makkah, is called *Sharif i Makkah*, not *Sharif i Makke*. The latter can only mean 'a man of the name of Sharif, born in Makkah.'

which lies on an elevated spot, reached by a flight of steps, near the old wall of Munger. At the foot, there are many tombs in a dilapidated state. The *Khádims* of the Dargáh say that when the fort of Munger was built, or rebuilt, Prince Dányál dreamed that a grave near the new wall emitted a smell of musk. The grave was discovered, and the Prince built a vault over it, for the inmate was evidently a saint. From this circumstance the saint is up to this day called 'Sháh Nafáh,' from the Persian *náfah*, a 'pod of musk.'

بسم الله الرحمن الرحيم * نصر من الله وفتح قريب و بشر المؤمنين * ببناء هذا
الكنيذ في عهد سلطان العادل سيد السادات جميع السعادات علو الدنيا و الدين
ابو المظفر حسين شاه سلطان خلد الله ملكه و سلطانه * بانى خير دانيال شاهزاده
سالمه الله تعالى في الدارين * سنة ثلث و تسعمائة //

In the name of God, the merciful and the clement! A victory from God, and a near favour, and announce the joyful tidings to the faithful (Qurán, lvi, 3). The erection of this vault (took place) in the reign of the just king, the Sayyad of Sayyids, the receptacle of auspiciousness, 'Aláuddunyá waddín Abul Muza'far Husain Sháh, May God perpetuate his kingdom and rule! The builder of this religious edifice is Prince Dányál—may God Almighty preserve him in both worlds! A. H. 903 [A. D. 1497-98].

When I exhibited this inscription at the meeting of the Society in July last, I alluded to the following passage from Prinsep's *Antiquities* (Thomas's edition, *Useful Tables*, p. 273) regarding the invasion of Ásám by Husain Sháh—

1498 Ásám invaded by Dulál Ghází, son of Husain Sháh

Musundár Ghází

Sultán Ghiásuddín.

As 'Dulál Ghází' is scarcely a Muhammadan name, the prince alluded to is evidently this Dányál. A short description of the invasion was given by me above, p. 79. The author of the *Riyáz* gives a few particulars, but without quoting his source. As Stewart has passed over the details, I translate the passage, as given in the MS. of the *Riyáz* in the Asiatic Society's Library. "After having reduced the Rajahs of the Districts as far as Orísá, Husain took tribute from them. After this, he resolved to invade the kingdom of Ásám, in the north-east of Bengal, and he set out with a large army of foot and a numerous fleet, and entered the kingdom and subdued it as far as *Kámrúp* and *Kántah* and other districts, which were under powerful Rajahs as *Rúp Náráin*, *Mál* (*Pál*?) *Kunwar*, *Gosá Lak'hán* (?) and *Lachemí Náráin*, and others, and collected much wealth from the conquered land, so that the Afghans, after destroying the palaces of those [Rajahs], erected palaces. The Rajah of the country, unable to withstand, withdrew to the mountains. Sultán Husain left his son with a strong army in Ásám to complete the settlement of the country, and returned victoriously to Bengal.

After the return of the Sultán, the Prince pacified and guarded the conquered country; but when the rains set in, and the roads were closed, the Rájah issued with his men from the hills, surrounded the Prince, and cut off his supplies. In a short time, they were all killed."

It is not said who 'Musunkár Ghází' and 'Sultán Ghíásuddín' are, whom Prinsep mentions as having gained a footing in Ásám.

2. *Náqiruddin Nuqrat Sháh.* Historians also call him *Naqib Sháh*, but this name does not occur on inscriptions. I do not know whether the Naqibpúr in Tándah is connected with his name. His other name, Nuqrat, occurs often enough in Bengal geography, as also those of his brother Mahmúd and his father Husain Sháh. We have—

1. Husainsháhí, in Maimansingh,
Nuqratsháhí, in Pabnah, Jasar.
Mahmúdsháhí,* in Pabnah, Jasar.
2. Husainábád, in Tándah and in the 24-Parganahs.
Nuqratábád, in Ghonághát.
Mahmúdábád, a whole Sirkár (Northern Jasar and Bosnah).
3. Husainpúr, in Nadiá, &c.
Naqibpúr, in Tándah.
Mahmúdpúr, in Dínájpúr.
4. Husain Ujjál, in Nadiá.
Nuqrat Ujjál, in Maimansingh.

It may also be of interest to remark here that the people of Chátágón (Chittagong) ascribe the first invasion of their District and their conversion to Islám to Nuqrat Sháh. I extract the following passage from a Persian History of Chátágón, entitled '*Aládis ul-Khewáron*' or '*Tarikh i Hamuli*.' This History was written by the late Maulawi Hamudullah Khán Bahadur, and was printed last year at Calcutta (8vo., 141 pages, with 34 pages of errata and additions). It contains many interesting facts. The author says (p. 17)—

In former days, wandering Faqírs and poor Muhammadans came to Chátágón district, and built opposite to Hindú shrines and Mug temples spurious graves, giving out that they were the resting-places of the renowned saints Bayazíd of Bistám† and 'Abdul Qádir of Ghan, who never put their feet on this heathenish shore. These faqírs made some money and attracted Muhammadan pilgrims from the neighbouring districts. And about 250 or 300 years ago, Náqiruddín Nuqratsháh, a King of Bengal, conquered the territory, fighting with the Mugs, and introduced in

* In consequence of the Bengali spelling "Mahamodshahée," this name is often corrupted to Muhammadsháhí. Thus in Mr. Westland's valuable Jessore Report, 'Husainábád' occurs on Husain Sháh's coins.

† *Vide* Westland's Jessore Report, p. 13. He calls him 'Bazid Bostan,' evidently a Bengali corruption.

Chátgáon Muhammadan rites, so that it became a *Dául Islám*. From ruins and legends it would appear that this Nuqrát Sháh Páshá, who was a king or a prince of Bengal, went after the destruction of Gaur, with a large number of Musalmán and Hindú emigrants, to Eastern Bengal, and attacked the Muz, took their town, and made it a domicile for his men. The reason for his emigration to these parts was this. One Alfa Husaini of Bagdad, a descendant of Pápirah (the daughter of the prophet), a great merchant, who possessed much wealth and many slaves and owned fourteen ships, had repeatedly been to Chátgáon, and houseled afterwards to go to Bengal, where he urged the king to conquer the district. He also assisted him with ships and material, and thus raised the standard of victory (*prophet*) in that country. Husaini, for this reason, became the king's son-in-law, and lived honored and distinguished. In fact up to the beginning of the present time, his descendants were the aristocracy here, and the late Mir Yahyá Islamábádí, founder of the well-known Madrasah, Mullá Mu'addín Sondipi, and others, traced their descent from Husaini.*** Of the antiquities which point to this religious king, I may mention Mauza' Fathábád, which was so called in remembrance of the conquest (*fath*), and also the great tank in Fathábád, and the mosque there, which was built of enamelled bricks. I have myself seen Nuqrát's mosque with its coloured bricks; but it is now broken and ruined and filled with rubbish. His great tank, the length of which is 700 paces, more or less, still exists, but the water has become bad. On account of the wickedness of the neighbouring people, the trade of the place has declined. People also say that a *pucca* house stood near it, which decayed and got covered with jungle and was full of snakes. Hence people set it on fire, and burned it down with the serpents and all. But prior to Aurangzib's conquest, no Muhammadan king besides Nuqrát Sháh is said to have come here.

Of the antiquities from the time before the Mughal conquest, but after that of Nuqrát Sháh, I must mention the old mosque near Fathábád, in Hat Hazárf [12 miles north of Chátgáon]. A very strong pillar is said to stand in it, from which water constantly trickles. The foundation of the town of Bhahuah, and the digging of the Bhahuah tank, are generally referred to the time of Nuqrát Sháh.

Of the inscriptions belonging to the reign of Nuqrát Sháh the earliest is one found by General Cunningham on a mound near Sa'dipur, Samargáon. I read it as follows:

قال الله تعالى وان المساجد لله فلا تدعوا مع الله احدا وقال النبي صلي الله عليه و سلم من بني مسجدا لله يدتغي به وجه الله بي الله له مثله في الجنة بني هذا المسجد لله في عهد السلطان المعظم المكرم السلطان ابن السلطان ناصر الدنيا والدين ابو المظفر نصرالله السلطان ابن حسين شاه السلطان الحسيني خلد الله ملكه و سلطانه وبناه اوجه الله مع بيت السقاية ملك الامراء و الوزراء قدوة الفقهاء والمحدثين تقى الدين ابن عيسى الدين المعروف ببار ملك المجلس بن مختار المجلس ابن سرور سلمه الله تعالى في الدارين في سنة تسع وعشرون وتسعمائة //

God Almighty says, 'Surely the Mosques belong to God; worshipping no one else besides God. The prophet says, 'He who builds a mosque for God, seeking thereby the reward of God, will have one like it built for him by God in Paradise.

This mosque was built in the reign of the great, the liberal king, the son of a king, Nāqiruddunyā waddīn Abul Muzaffar Nuqrāt Shāh, the king, son of Husain Shāh the king, the descendant of Husain [Al Husaini],—May God continue his kingdom and rule! It was erected, in order to obtain the reward of God, together with the well, by the Malik ul Umarā wal-Wuzarā, the chief of the lawyers and teachers of the Hadīs, Taqī addīn, son of 'Ain uddīn, known as Bār Malik ul-Majlis, son of Mukhtār ul-Majlis, son of Sarwar. May God preserve him in both worlds! In the year 929 A. H. [A. D. 1523]

It is a pity that this inscription does not mention the month; for if it did, we could approximately fix the death of Husain and the accession of Nuqrātshih.

Another inscription of Nuqrāt Shāh, referring to A. H. 936, was published in this Journal, Vol. xxxix, 1870, p. 278, and I now add a reading of the *Qadam Rasūl* inscription of 937, of which the Society has received two rubbings, one from Mr. W. L. Heeley, C. S., to whom the Society owes a large collection of Gaur rubbings, and another by General Cunningham, whose splendid collection of Hindū and Muhammadan inscriptions of Upper India and Bengal has just reached the Society.

قال الله تعالى من جاء بالحسنة فله عشر امثالها * بني هذه الصفة المطهرة
وحجرها التي فيه (sic) اثر قدم رسول الله صلي الله عليه وسلم السلطان المعظم
المكرم السلطان ابن السلطان ناصر الدنيا و الدين ابو المظفر نصر تشاه السلطان بن
حسين شاه السلطان بن سيد اشرف الحسيني خلد الله ملكه وسلطانه واعلى امره
وشانه في سنة سبع وثلثين وتسعمائة ॥

God Almighty says, 'He who brings the good deed, will be rewarded ten fold.' [Qorān, vi. 161]. This pure dais and its stone, on which is the foot print of the Prophet—May God bless him!—were put up by the great, generous king, the son of a king, Nāqiruddunyā waddīn Abul Muzaffar Nuqrāt Shāh, the king, son of Husain Shāh, the king, son of Sayyid Ashraf ul Husaini,—May God perpetuate his kingdom and rule, and elevate his condition and dignity! In the year 937, A. H. [A. D. 1530-31.]

The *Riyāz* and Stewart give the date of the *Qadam Rasūl* to be A. H. 939, but the rubbing clearly shews 937.

Nuqrāt Shāh was murdered by his ennuehs in 939. This year, though not mentioned in the *Riyāz*, is yet implied by his account, whatever his source may have been. The *Tabaqāt* gives a short account of Nuqrāt's reign till 939, and then says—"After this, the history of the Bangālis has not come to hand. Naqib Shah reigned eleven years, and shortly afterwards, Bengal was taken by Sher Shāh." Frishtah's account is extraordinary and unreliable. He says that Naqib died in 943, but that the manner of his death was unknown. He was succeeded by Mahmūd, a Bangālī nobleman, who being attacked by Sher Shāh fled to Humāyūn. The *Riyāz* adds that some historians say, Nuqrāt Shāh reigned sixteen years, others thirteen, others still less.

3. 'Aláuddin Firúz Sháh, son of Nuqrát Sháh. The *Riyáz* is the only history that mentions him under the name of Firúz. His source is unknown to me. The existence of this king is now proved by the above inscription (p. 332). General Cunningham has had for some time in his possession a sealing-wax impression of a coin belonging to this king. The coin is, I believe, in the British Museum. Stewart and Marsden give Firúz Sháh only three months. The MS. of the *Riyáz* in the Society's Library unfortunately appears to be defective in this part, the passage being—

هنوز سه سال (sic) سلطنت کرده بود (؟) که سلطان محمود بنگالی (كه) يك از
هژده پسر سلطان علاء الدين حسين بود و نصرت شاه او را باصارت سريلندی داده
بود و تازگي نصرت شاه [تا زندگي نصرت شاه ؟] ملوک امرايانه ميداشت درين
وقت قابو يافته فيروز شاه را بقتل آورده بر سرير سلطنت بورته پدر خود جلوس نمود !!

He had reigned..... (?) three years (?), when Sultán Mahmúd of Bengal, one of the eighteen sons of 'Aláuddin Husain Sháh, who had been raised by Nuqrát Sháh to the position of an Amír, and who during the life of Nuqrát Sháh had been treated as such, found an opportunity and killed Firúz Sháh, and ascended the throne of royalty among the heirs of his father.

4. *Ghiásuddín Mahmúd Sháh*, the last independent king of Bengal (910 to 944). He is the "El Rey Mamud de Bengala" with whom Alfonso de Mello made a treaty, as will be found in Barros' 'Da Asia.' When besieged in Gaur by Sher Sháh's army under Jalál Khán and Khawáf Khán, he applied to Nunode Cúna, the governor of the Portuguese settlements, for help; but the nine ships sent to him did not arrive in Bengal till after the surrender of the city (944). Mahmúd's fate is known the *Tarikh i Sher Sháhí*.* The *Akbarnámah* (Lucknow Edition, I, p. 184) calls Mahmúd "Naṣīb Sháh." According to the *Riyáz*, Mahmúd died at K'halgáon (945), from grief at the loss of his two sons or from the wounds he had received in defending Gaur.

The only inscription that I have seen of Mahmúd Sháh is the following from General Cunningham's collection. It refers to the building of a mosque in Sa'dullahpúr, Gaur, by a lady whose name is not mentioned.

قال النبي صلى الله عليه وسلم من بنى مسجدا لله بني الله له بيتا مثله في
الجنة * بنى هذا المسجد الجامع في عهد السلطان ابن السلطان غياث الدنيا
والدين ابوالمظفر محمود شاه السلطان ابن حسين شاه السلطان خلد الله ملكه
وسلطانه وبانيه بيدي التي دامت سيرة ادام الله معاليها في سنة احدى اربعين
وتسعمائة ||

The Prophet says, 'He who builds a mosque for God, will have a house like it built for him by God in Paradise. This Jani' Mosque was built during the reign of

* Vide the translation of this interesting history by the Hon'ble E. C. Bayley, in Dowson's edition of Elliot's History of India, IV, pp. 360 and 361. The 'Bahar-kúndah' mentioned there, is Bharkúndah in Bírghúm (vide Aín text, I, 406).

the king, the son of a king, Ghiásuddunyá waddín Abul Muza'ffar Mahmúd Sháh, the king, son of Husain Sháh the king,—may God perpetuate his kingdom and rule. Its builder is a lady,—May she long live, and may God continue her high position! 941 A. H. [A. D. 1534-35.]

A Picnic in Ancient India. — By BĀBŪ RĀJENDRALĀLA MITRA.

The Vedas represent the ancient Indo-Aryans to have been eminently religious in all their actions. According to them, every act of life had to be accompanied by one or more mantras, and no one could rise from his bed, or wash his face, or brush his teeth, or drink a glass of water, without going through a regular system of purifications, salutations, and prayers; and if he really did practice all the rites and ceremonies enjoined in those works, his life doubtless must have been an unbroken chain of religious observances from birth to burning-ground. It would seem, however, that the bulk of the community did nothing of the kind. Certain sacraments and initiatory rites everybody had to go through, and well-to-do persons had to celebrate feasts and fasts from time to time; but in all such cases, the heaviest burden they had to bear was a pecuniary one, the actual performance of the ceremonies being left to the priesthood. Before the Tántric form of worship got currency in the country, the S'údra had literally nothing to do by way of religious exercise beyond evincing a reverential devotion when he employed one or more Brahmans to perform a sacrifice, or get through a sacrament, and to salute and bow as often as required. No Vedic mantra could be repeated by him even when offering water to the spirits of his ancestors, and there was for him no other set form of prayer wherewith to address the Great Father of the universe. The Vais'ya and the Kshatriya, as belonging to the twice-born classes, and having the right to wear the sacrificial cord, were at liberty to repeat Vedic mantras, and had to repeat them when going through particular sacraments, or performing s'ráddhas; but like the S'udras before the Tántric period, they had no regular service for daily observance beyond one or more salutations to the great soul of the sun, or the repetition of the Gáyatrí. At the periodical feasts and fasts they, as Yajamānas, or the institutors of sacrifices, provided the wherewithal to perform the rites and ceremonials, installed the priests in their respective offices, and recompensed them for their labour. But in the actual work of repeating mantras, offering oblations, and going through the ritual, they took but a slender share.

It was the Bráhmaṇ only for whom the Vedas enjoined an endless round of rites, ceremonies and observances, innumerable mantras for repetition on different occasions, and a host of fasts and penances extending from three

nights to many years. But as they formed but a small section of the general community, their examples, however well calculated to restrain immorality and induce a religious spirit, did not keep the people engaged in actual religious ceremonies for any protracted period, or too frequently. At any rate, the claims of religion on their time and attention were not greater than what they were on those of other nations of antiquity; and the people at large ate and drank and enjoyed life without any serious let or hindrance. Even Brahmans, when not actually engaged in the performance of sacrifices, were not debarred from the sweets and pleasures of the world, and the most ancient treatise* on the various ways of enjoying the society of women, *i. e.* on the *ars erotica*, is due to a heavy sage named Sankháyana, whose ordinances are held to be quite as sacred as the Vedas themselves.

Little is, however, known as to how the people enjoyed themselves in their light moments, and of the games, pastimes, recreations and entertainments which pleased them the most. I think, therefore, that the following extract from the Harivaṁśa Parva of the Mahābhārata, (chapters 146-47)† affording a most graphic picture of an ancient Indian Picnic, will not be uninteresting to the readers of the Journal. It depicts a state of society so entirely different from what we are familiar with in the present day, or in the later Sanskrit literature, that one is almost tempted to imagine that the people who took parts in it were some sea-kings of Norway, or Teuton knights carousing after a fight, and not Hindus; and yet if the Śāstras are to be believed, they were the Hindus of Hindus, the two most prominent characters among them being no less than incarnations of the Divinity, and another a holy sage, who had abjured the world for constant communion with his Maker, and whose law treatise (*Nārada Saṁhitā*) still governs the conscience of the people.

The scene of the Picnic was a watering-place on the west coast of Guzerat near Dvārkā, named Pindāraka. It is described as a *tīrtha* or sacred pool, and the trip to it is called *tīrtha yātrā*, or a pilgrimage to a holy place; but the sequel shows that the trip was one of pleasure and had nothing religious about it. The party, headed by Baladeva, Krishna, and Arjuna, issued forth with their families and thousands of courtezans, spent the day in bathing, feasting, drinking, singing and dancing, and returned home without performing any of the numerous rites and ceremonies, which pilgrims are bound by the Śāstras to attend to.

The presence of the courtezans in the company is a fact worthy of special note, for although Hindu society has always looked upon fallen women with kind, indulgent eyes, and instances are on record of such persons having

* S'āṅkhāyana Kāma Sūtra.

† Owing to an error in numbering in the Asiatic Society's edition of the Harivaṁśa, the chapters there appear as 147 and 148.

been admitted into respectable household after proper expiations, the Sāstras are peremptory in condemning all association with them as long as they remain unreclaimed, especially on the part of women of family, and modern and mediæval custom has never permitted any such association as is implied by bathing, eating, drinking, dancing, and singing together. It indicates a sad laxity of morals, and the state of society which permitted this, cannot but be condemned. The Yādavas, however, felt no compunction in that respect, and not only allowed their wives and daughters freely to mix with harlots, but themselves joined the party, and indulged in unrestrained debauchery in the presence of parents and seniors. The only person who formed an exception was Baladeva. His constancy to his only wife, Revatī, is the theme of praise everywhere ; and never has his character been assailed for even the slightest neglect of his conjugal duty. At the Picnic he appears, as was his wont, tottering with drink ; but he is always beside his consort, and gratifies himself by bathing and singing and dancing with her, and her alone.

Drinking appears to be another indulgence to which the Yādavas were extremely addicted. Family women and prostitutes freely joined the men in these bacchanalian orgies, and the poet who records their deeds, seems to take a delight in pointing how some tottered, and others fell, and others became reckless. The stuff they drank was of five kinds, namely, *kādambari*, *mādhrika*, *mairega*, *āsava*, and *surā*—all strong spirits prepared in different ways. The first was distilled from the ripe fruit of the kadamba (*Nauclera kadamba*), which is highly saccharine, but not edible in its natural state. Baladeva was particularly attached to this drink, and his name is rarely mentioned in the Purāṇas without some reference to it. In the present day, the fruit is not used in any way, and only affords a repast to the large frugivorous bats called flying-foxes. The second was distilled from the ripe petals of the *Bassia latifolia*,—the *mowā* of the North West Provinces, where it is to this day extensively manufactured for the use of the lower orders of the people. The third was rum seasoned with the blossoms of the *Lythrum fruticosum*. The fourth was pure rum ; and the last arrack distilled from rice meal. These spirits were, I imagine, always drunk neat, for there is no mention any where of their having been diluted ; and hence probably was the necessity of eating a little of sugared or salted cake or subacid fruits after every draft to take off the pungency of the drink from the mouth. At the picnic, fried birds are especially mentioned for this purpose. There are several words in the Sanskrit language to serve as generic names for these " wine biscuits," and no description of a drinking bout is complete without reference to such catables. Even in the present day, no native ever thinks of drinking without having some such food by his side.

The description of the banquet is also remarkable. The *pièce de resistance* at the meal was not rice or bread, as one would expect in India,

but roast buffalo, which seemed to have been a favourite dish with the Hindus in former days, and I find in the *Vana Parra* of the Mahābhārata that buffalo meat was publicly sold in the market,* and the stalls displaying it were crowded by customers. In Kashmir, such meat, I am told, is regularly sold in the present day to Hindu purchasers, and the lower orders of the people in Bengal, such as Muchis, are particularly fond of it. The meat was roasted on spits, ghi being dropped on it as the dressing proceeded, and seasoned with acids, sochel salt and sorrel leaves. Venison was liked in a boiled state, dressed in large haunches, and garnished with sorrel, mangoes, and condiments. Shoulders and rounds of other kinds of meat in large pieces were boiled, roasted on spits, or fried in ghi, and sprinkled over with sea salt and powdered black pepper.

Beef, however, is not mentioned as forming an ingredient in the feast, although the Mahābhārata elsewhere describes a king named Rantideva, who used to slaughter daily two thousand heads of cattle, besides as many other animals, for use in his kitchen. He is described as a most virtuous king who acquired great religious merit by daily feeding innumerable hosts of beggars with beef.†

Curries were likewise prepared with meat, but did not take a prominent part in the bill of fare. Even little birds were preferred roasted on spits to being fried or curried. The text is silent as to the species of the birds used; but in the Grihya Sūtra of Āśvalāyana, partridges (*tittiri*) are recommended as appropriate for infants just beginning to take solid food, and ducks, doves, pigeons, and ortolans were formerly in common use.

For sauces and adjuncts, tamarind, pomegranates, sweet basil, acid herbs, ginger, assafoetida, and radishes were largely used.

The text is not clear as to whether the buffalo meat was roasted entire, or in cut pieces, but the haunches, shoulders, and rounds, dressed entire, must have necessitated some kind of carving. As no allusion is, however, anywhere made to knife and fork, it is to be supposed that "the cooks, who, under the superintendence of diligent stewards," served at the

* मार्गसाहिपसामानि विक्रीणन्तं तपस्विनं ।

आकुलत्वाच्च ऋद्धुणामेकान् संस्थितो द्विजः ।

वनपर्वणि २०६ अध्याये १२७११ श्लोकः ।

† राज्ञो महानसे पूर्वं रन्तिदेवस्य वै द्विज ।

द्वे सचखे तु बध्यते पशूनामन्वहं तदा ।

अहन्यदनि बध्यते द्वे सचखे गवां तथा ।

समांसं ददतो ह्यग्रे रन्तिदेवस्य नित्यसः ।

अतुला कीर्त्तिरभवत्तृपस्य द्विजसत्तम ।

वनपर्वणि २०२ अध्याये १२८०८—१०—११ श्लोका ।

feast, must have carved the meat before offering it to the guests, in the same way as is done in Persia, Arabia and other Moslim countries. It was in fact the French custom of carving on the side-board, which is so fast gaining ground in England. The idea of such carving just before serving, is horrifying in India in the present day, and no meat food is dressed in larger pieces than what can be served to one person. Sweetmeats and cakes, when intended for offerings to gods, are sometimes made very bulky, but when prepared for man, they are seldom made larger than what would suffice for one individual.

Of cakes, the text does not afford a good list, nor does it mention their constituents in any detail. Sugar and cheese are the only substantial materials named, and salt, ginger, saffron, and ghi as adjuncts. The only three kinds of made cakes I can recognize are *ādra*, a cake made of sugar and coconut grains spiced with ginger, now called *ādraki*; candied sugar coated with tila seed *khaṇḍaka*, now known as *vīrakhaṇḍi*; and *ghrita-purnaka* a compound of flour, sugar, and ghi, common in the present day in the North-West under the name of *ghewar*. These were partaken along with wine, as dessert, after the first course of meat had been finished.

It is not distinctly mentioned whether the ladies joined the party at the first meal, but as they were present at the dessert and regaled themselves with spirits, roasted birds, and sweetmeats; and the elders, who did not partake of flesh meat and spirits, remained in the company, and made their repast on vegetables, fruits, curds, milk, whey, cream and the like, the inference becomes inevitable that the woman-kind did sit with their lords at the first course, and partake of the meat food. This may appear shocking to modern Hindu ideas of propriety, but where the whole course of life and rules of social relationship were entirely different, this departure from strict etiquette, even when opposed to the maxims and canons of the Sāstras, cannot be taken to be such as not to be probable.

The descriptions of dancing, singing, music, and dramatic exhibitions speak for themselves and call for no remark. In dancing, the practice seems to have been for each man to take his wife for his partner, and accordingly we see Baladava dancing with his wife Revatī, Krishna with Satyabhāmā, and Arjuna with Subhadrā. Those who had no wives with them, danced with public women; but they all danced and sang together, in the same arena without any sort of restraint. Those who were so unfortunate as not to get partners danced by themselves, and often became the butt of their neighbours' wit and humour. The part which the sage Nārada takes in dancing, gesticulation and mimicry, and as the butt of every practical joke, is worthy of particular note, as showing that the saintly character of ancient Indian sages, was by no means a bar to their joining in fun and frolic, and partaking of the pleasures of the world. Dancing with one's own wife will doubtless

appear to Europeans in the light of a sample of Eastern jealousy ; but to modern Indians the mere fact of ladies of rank dancing before a large assemblage, and in the presence of seniors, will not fail to strike as highly reprehensible. To qualify the ladies for taking a becoming part in such entertainments it was formerly necessary to employ a music master in every respectable household. As in Italy two centuries ago, so in India many centuries before that, eunuchs were much esteemed for the sweetness of their voice, and held in great requisition as teachers of music, and in the *Virāṭa Parva* of the *Mahābhārata*, Arjuna becomes a eunuch, in order to serve as a music master to the daughter of a king.

I do not find any reference to maidens as forming members of the picnic party, and the description in a subsequent chapter of Bhānumatī, the maiden daughter of Bhānu, a Yādava chief, having been abducted from her home by the demon Nikumbha, while the Yādavas were away from Dvarkā, engaged in their carousals, would suggest the inference that they were not taken to such gatherings.

The description of the picnic in the *Harivaṃśa* runs as follows : The translation is anything but literal, and many epithets and repetitions have been omitted, but not a single word has been put in of which there is not a counterpart in the original, or which has not been rendered necessary for the sake of idiom.

“ When Viṣṇu of unrivalled vigour dwelt at Dvārāvati,* he once desired to visit the sea-side watering-place† of Pindāraka. Appointing king Vasudeva and Ugrasena regents for the management of state affairs, he started with the rest (of his family).

“ The wise Baladeva, the lord of regions, Janārdana and the princes, earthly lords of god-like glory, issued forth in separate parties. Along with the handsome and well adorned princes, came thousands of prostitutes. These dealers on their beauty had been originally introduced into Dvārāvati by the mighty Jādavas, who had brought them away from the palaces of the Daityas whom they had conquered. These were common harlots who had been kept for the entertainment of the Jādava princes. Kṛṣṇa had kept them in the city with a view to prevent unseemly brawls which, at one time, used to take place on account of women.

“ Baladeva went out with his only affectionate wife, Revatī, on whom the glorious chief of the Yadu race, entertained the feeling which the Chakravāka has for his mate.‡ Adorned with garlands of wild flowers, and jubilant with draughts of kādamba wine, he sported with Revatī in the ocean waters.

* Dvarkā, so called from its having had many doors, “the city of a hundred gates.”

† Lit. *tirtha* a sacred pool, but the sequel will show that the trip was one in quest of pleasure and not a pilgrimage for religious merit.

‡ The Brāhmuni drake, *Anas rutile*, is said to be the most constant of husbands.

“Govinda of the lotus eye entertained himself in many forms with his sixteen thousand wives, so pleasing every body, that each thought Krishna was most attached to her, and it was for her only that he was in the ocean water. They were all exceedingly gratified and delighted with Krishna. Thinking herself to be the greatest favourite, each cast the most bewitching glances on him, sang in great delight, and seemed to drink him with her eyes.* Each carried her head high at the idea of being the greatest favourite, and, without any feeling of jealousy for their rivals, loved him with the most tender passion. Thus enjoyed Krishna his sport in the clear water of the sea, (even as if) he had assumed a multiplicity of shapes for the gratification of his numerous consorts. By his order, the ocean then circulated clear and fragrant water, devoid of all saltness. Standing ankle-deep or knee-deep, thigh-deep or breast-deep, each according to her choice, the ladies in great glee threw showers of water on Krishna, even as the heaven pours on the sea; and Krishna, in his turn, showered water on the ladies, as gentle clouds drizzle on flowering creepers. One fawn-eyed nymph leaning on his shoulder, cried out “Help, help, I am falling;” others swam leaning on floats of diverse forms, some shaped like cranes, others like peacocks, others like serpents, or dolphins or fish. Some, resting on their breasts like pitchers, swam about in great joy for the gratification of Janárdana. Delighted with the sight, Krishna sported with Rukmini, even as the lord of the immortals sports with his consort; and his other wives did what each thought likely to please him most. Some gazelle-eyed damsels disported in the water with very thin raiment on their persons; and Krishna, knowing their feeling, did for each just what she would like most at the time. The ladies thought that in birth and accomplishment he was in every way worthy of them, and so they devoted themselves to his gratification, to win his sweet smile, and delightful converse, and charming affection.

Separated at night from each other, the drake and the duck, mourn their hard fate, and send forth from the opposite banks of a river their lamentations to each other; “Chakwi, shall I come?” “No, chakwa.” “Chakwa, shall I come?” “No, chakwi,” being the burthen of their woe. The legend has it that two lovers, for some indiscretion, were transformed into Bráhmáni drake and duck, and condemned to pass the night apart from each other on opposite banks of a river. A Bengali epigram says, a fowler shut up a drake and a duck in the same cage at night, whereupon said the duck: “How happy even this sad state when the fowler appears kinder than our fate.”

চক্রবাক চক্রবাকী একই পিঙ্গরে ।

নিশাঘোণে নিষাদ আনিল নিঃসরে ॥

চকী বলে চকপ্রিয় এ বড় কৌতুক ।

বিধি হতে ব্যাধ ভাল এত দুঃখে সুখ ॥

* Very loosely rendered and several words omitted.

"The accomplished and heroic princes, in a separate company, entertained themselves in the sea waters with the damsels that had come with them, and who were proficient in dancing and singing. Though forcibly brought away from their homes, these women had been overcome by the suavity of the princes; and the latter in their turn were delighted with the singing and acting and dancing of these excellent creatures.

"At this time, Krishna sent for Panchachúdá, Kauverí, Máhendrí, and other accomplished Apsarás to heighten the pleasures of the entertainment, and when they, with folded hands, appeared before him, and saluted him, the Lord of the universe spoke to them most encouragingly, and desired them to join the fête without fear. 'For my sake,' said he, 'O fair ones, entertain the Yadus; exhibit to them your rare proficiency in dancing and singing, as well as in acting and music of diverse kinds. These are all myself in different persons, and if you entertain them well, and acquit yourselves becomingly, I shall grant you all your desires.'

"The charming Apsarás respectfully received the orders of Hari, and entered joyfully the pleasant throng of the noble heroes. Their advent on the waters shed new lustre on the wide ocean, like lightning playing on the breast of heavy dark clouds. Standing on water as on land, they played on aquatic musical instruments, and enacted heavenly scenes of delight. By their aroma and garlands and toilette, by their coquetry, blandishment, and wanton dalliance, these sweet ones with beaming eyes robbed the minds of the heroes. By their side glances and hints and smiles, by their assumed arrogance and mirth and complaisance, they completely charmed their audience. When the princes were overcome with wine, these bewitching actresses lifted them high in the air, and anon held them in their hands, looking at them with enchanting grace.

"Krishna himself commenced the same pastime with his sixteen thousand wives for their gratification, and this did not excite the ridicule or wonder of the Yadus, for they knew his worth and nature, and preserved their gravity. Some ran to the Raivataka hill, some to houses, and some to the jungle, whatever suited them best, and returned immediately after. By order of Vishnu, the lord of regions, the undrinkable water of the ocean then became drinkable, and the damsels with beaming eyes, taking each other by the hand, walked on the water as on land, now diving deep, and anon rising on the surface.

"Of eatables and drinkables, of things to be chewed, of things to be swallowed, of things to be sucked, and of things to be licked, there was nothing wanting, and whatever was desired was immediately forthcoming.

"Wearing fresh garlands, these faultless women, never to be overcome, entertained themselves in private in the cabins of pleasant boats even as do the gods.

" Having thus bathed, the Andhakās and the Vishnis in the afternoon entertained themselves by perfuming their persons with unguents on board their boats. Some of the cabins in these vessels were wide, others square, others circular, others like the svastika, others like the Mandāra hill, while others like the Kailāsa and the Sumeru mountains. Some were shaped like birds, some like wolves, some like the painted Garuḍa, some like cranes, some like parrots, and some like elephants; some painted with gateways of lapis lazuli, some gilt, some bedecked with rubies and pearls and lapis lazulis, and other gems,—all designed for the purpose by Viśvakarmā. Guided by able seamen, these boats, bright as gold, added new lustre to the billows. Pleasure boats and tenders and large vessels with commodious cabins adorned the bed of the flowing main. When these noble vessels moved about on the sea, they seemed like the abodes of Gandharvas floating in the air. The heavenly architect, Viśvakarmā, had, in these cabins, depicted gardens and trees and tanks and festal halls and cars in imitation of those in the Nandana Park of Indra, and they were in no way inferior to their heavenly archetypes.

" By order of Vishnu birds were singing sweetly and delightfully in the forest; white cuckoos of paradise cooed mellifluently for the gratification of the heroes; peacocks, surrounded by their hens, danced gracefully on the tops of the cabins resplendent as moonbeams. The flags of the vessels bore the pictures of birds; and the garlands on the vehicles were musical with the hum of bees. By order of Nārāyaṇa the trees (in the neighbourhood) produced fragrant flowers of all seasons; the zephyr, loaded with the pollen of various flowers and the aroma of the sandal-wood, blew gently, driving away all exhaustion—now warm and anon cool according to the varying desires of the picnicians. No hunger, no thirst, no langour, no ennui, no grief assailed them, when through the grace of Vāsudeva, they were engaged in this delightful fête of music, singing, and dancing.

" Thus did these god-like heroes, protected by the wielder of the discus, occupy themselves in their aquatic recreations, spreading over many leagues (yojana) of the sea, the abode of waters.

" For the sixteen thousand wives of Krishna, Viśvakarmā had provided appropriate vessels bedecked with the choicest jewels to be found in the three regions of the universe, and furnished with becoming wardrobes. Each wife had her separate cabin, decorated with lapis lazuli, gold, and floral treasures of every season, and redolent with the finest perfumes.

" The long-armed and handsome Baladeva, covered with sandal paste, with eyes glowing crimson under the influence of kadambari wine, and unsteady steps, paid his attention solely to Revati. Dressed in two pieces of sky-blue cloth, bright complexioned as the moon, and languishing-eyed, he appeared charming like the moon partially hidden under a cloud. With a

beauteous earring on the left ear only, and a pretty lotus on the other, beholding the smiling face and arching glance of his love, he entertained himself with her.

"Now, by order of Krishna, the destroyer of Kañsa and Nikumbha, the charming band of heavenly nymphs repaired to the place of Baladeva to enjoy the sight of Revatí. They saluted Revatí and Baladeva, and then spreading around them, some of the fair and lovely ones danced, while others sang to the sweet cadence of music. Earnest in their desire to entertain Bala and his consort, the lovely daughter of king Revata, and by their desire, they exhibited various dramatic scenes, such, as they thought would prove entertaining. Some of the damsels of fascinating forms, assuming the dress, language, and action of particular places, acted with great delight, beating time with their hands. Some sang the auspicious names of Sañkarshana Adhokshaja, Nandana, and others. Some enacted romantic scenes from the life of Krishna, such as the destruction of Kañsa and Pralamba; the overthrow of Chánura; the tying of Janárdana round the waist by Yasodá which spread wide her fame; the slaughter of the giants Arishta, Dhenuka, and S'akuni; the life at Vraja; the breaking of the two Arjuna trees; the execution of Vrikas, (wolves); the discomfiture of the wicked Nága king Káliya in a whirlpool of the river Yamuná; the recovery of certain blue lotuses from a lake after destroying the demon S'añkha; the holding up of the hill Govardhana for the protection of kine; the straightening of the humpback of the sandal-paste-grindress Kubjá; the reduction of Krishna's own faultless body into a dwarf; the overthrow of the Samblas, the aerial city of Harischandra; the assumption of the name Halayudha, or wielder of the ploughshare; the destruction by him of the enemies of the Devas; the defeat of the mighty kings of Gándhára, tying them behind his ear, and the rape of their daughters; the abduction of Subhadrá; the victory over Balábhaka and Jambumáli; the loot of jewels, through his soldiers, from Indra. These and others, most delightful subjects, gratifying to Baladeva and Krishna, were enacted and sung by those beautiful women.

"Inflamed by plentiful libations of kádamba liquor, Balaráma the majestic, danced in joy with his wife, the daughter of Revata, sweetly beating regular time with his own hands. Beholding this, the damsels, were delighted. The wise and noble Krishna, to enhance the enjoyment of Bala, commenced to dance with his wife, Satyabhámá. The mighty hero Pártha, who had come to this sea-side picnic with great delight, joined Krishna and danced with the slender and lovely Subhadrá (his wife). The wise Gada, Sárana, Pradyumana, Sámha, Sátyaka, the heroic son of the daughter of Sútrajit (Satyabhámá), the handsome Charudesma, the heroic prince Nisata and Urukha the sons of Baladeva, Sañkaya, the generalissimo of the army of Akrura, and others of the heroic race, danced in joy. By the grace of Krishna, the

pleasure boats flourished under the dense crowd of the foremost dancers of the Bhaima race. Through the godlike glory of the heroic and most ardent dancers of the Yadu race, the creation smiled in joy, and all the sins of the princes were subdued.

“The Bráhmaṇ sage Nárada, the revered of the gods, came to the scene for the gratification of Madhusúdana, and in the midst of the noble Yadus began to dance with his matted locks all dishevelled. He became the central figure in the scene, and danced with many a gesticulation and contortion of his body, laughing at Satyabhámá and Keshava, at Partha and Subbadrá, at Baladeva, and the worthy daughter of the king of Revata. By mimicking the action of some, the smile of others, the demeanour of a third set, and by similar other means, he set all a-laughing who had hitherto preserved their gravity. For the delectation of Kṛishṇa, imitating the mildest little word of his, the sage screamed and laughed so loudly and repeatedly, that none could restrain himself, and tears came to their eyes (from immoderate laughing). By desire of Kṛishṇa, the ladies gave to Nárada presents of costly jewels and dresses of the rarest description; they showered on him also pearls and celestial garlands of the choicest kind, and flowers of every season.

“When the dance was over, Kṛishṇa took by the hand the venerable sage Nárada of imperturbable mind, and coming to the sea water along with his wife Satyabhámá, Arjuna and others, addressed Sátyaki with a smile, saying, ‘let us enter the delightful water with the ladies in two parties. Let Baladeva with Revatí be the leader of one party, consisting of my children and half of the Bhaimas; and let the other half of the Bhaimas and the children of Bala be on my side in the sea water.’ Turning then to the regent of the sea, who stood with folded hands before him, the delighted Kṛishṇa said to him: ‘Let thy waters be fragrant and clear, and divested of noxious animals; let them be cheering to the sight, and ornamented with jewels, and pleasant to walk upon. Knowing by my grace what is in each person’s mind, render yourself agreeable to one and all. Render thy waters drinkable or undrinkable, according to each individual’s choice; let thy fishes be inoffensive and diversified in colour like gold and jewels and pearls and lapis-lazuli. Hold forth all thy jewels, and lotuses, red and blue, blooming and fragrant and soft, full of sweet-flavored honey, over which the bees should pour their hum. Place on thy waters urns full of mairaya,* mádhvika,† surá,‡ and ásava,§ and supply the Bhaimas golden goblets wherewith to drink those liquors. Let thy mighty waters be cool and calm and redolent with rafts full of flowers; and be mindful that my Yadus be not in any way incommoded.’

* Spirituous liquor made of the blossoms of *Lythrum fruticosum* with sugar.

† Ditto made of the blossoms of the *Bassia latifolia*.

‡ Ditto of rice meal,—arrack.

§ Ditto of sugar,—rum.

"Having thus issued his orders to the sea, he commenced to play with Arjuna, while Satyabhámá, incited by a wink of Kṛishṇa, began to throw water on Narada. Then Balaráma, tottering with drink, with great glee fell into the water, and beckoning the charming daughter of Revata by his side, took her by the hand. The sons of Kṛishṇa and the leading Bháimās, who belonged to the party of Rama, joyous and bent on pleasure, unmindful of their dresses and ornaments, and excited by drink, followed him into the sea. The Bháimās belonging to the party of Kṛishṇa, headed by Nishatṭha and Uluuka, arrayed in many-coloured garments and rich jewels and bedecked with garlands of párijáta flowers, with bodies painted with sandal wood paste and unguents, excited by wine, and carrying aquatic musical instruments in their hands, began to sing songs appropriate for the occasion. By order of Kṛishṇa, hundreds of courtezans, led by the heavenly Apsarás, played various pleasing tunes on water and other instruments. Always bent on love, these damsels, proficient in the art of playing on musical instruments in use on the aerial Ganges,* played on the instrument called *Jaladardduca†* and sweetly sang to its accompaniment. With eyes glorious as lotus buds and with chaplets of lotuses on their crowns, these courtezans of paradise appeared resplendent as new-blown lotuses. The surface of the sea was covered by the reflection of hundreds of moon-like feminine faces, seeming as if by divine wish thousands of moons suddenly shot forth in the firmament. The cloud-like sea was relieved by these damsels like dazzling streaks of the charming mistresses of the thunderbolt,—even as the rain-bearing cloud of the sky is set off by lightning. Kṛishṇa and Nárada, with all those who were on their side, began to pelt water on Bala and his party; and they in their turn did the same on the party of Kṛishṇa. The wives of Bala and Kṛishṇa, excited by libations of arrack, followed their example, and squirted water in great glee with syringes in their hands. Some of the Bháima ladies, over-weighted by the load both of love and wine, with crimson eyes and masculine garbs, entertained themselves before the other ladies, squirting water. Seeing that the fun was getting fast and furious, Kṛishṇa of the discus-hand, desired them to restrain themselves within bounds; but he himself immediately joined in play with Narada and Pártha to the music of the water instruments. Though they were ardently engaged in their entertainment, still the moment Kṛishṇa expressed his wish, the Bháima ladies at once desisted, and joyously commenced to dance for the gratification of their lovers.

"On the conclusion of the dance, the considerate lord Kṛishṇa rose from the water, and, presenting unguents to the learned sage, put them on himself. The Bháimās, seeing him rise from the water, followed his example, and, put-

* It is supposed that there is a counterpart of the terrene Ganges in the air.

† I cannot find any description of this instrument in treatises on Music.

ting on their dress, repaired by his order to the banqueting hall. There they took their seats according to their respective ranks, ages, and relationship, and cheerfully commenced the work of eating and drinking. Clever cooks, under the superintendence of diligent stewards, served them large pieces of meat roasted on spits, and meat cooked as curries, and sauces made of tamarinds and pomegranates; young buffaloes roasted on spits and dressed by dropping ghi thereon; the same fried in ghi, seasoned with acids and sochel salt and sorrel leaves; large haunches of venison boiled in different ways with sorrel and mangoes, and sprinkled over with condiments; shoulders and rounds of animals dressed in ghi, well sprinkled over with sea salt and powdered black-pepper, and garnished with radishes, pomegranates, lemon, sweet basil, *Ocimum gratissimum*, assafetida, ginger, and the herb *Andropogon schananthus*. Of drinkables, too, of various kinds, the party partook most plentifully with appropriate relishes.* Surrounded by their loved ones, they drank of maireya, mádhvika, surā, and āsava, helping them on with roasted birds, seasoned with pungent condiments, ghi, acids, sochel salt, and oil; cakes of rich flavour, some made with clayed sugar, some colored with saffron, and some salted; ginger comfits, cheese,† sweet cakes full of ghi, and various kinds of candied stuffs.

“Udhvava Bhoja and others, respected heroes who did not drink, heartily feasted on various kinds of cooked vegetables and fruits, broths, curds, and milk, drinking from cups made of shells fragrant rasāla of diverse kinds‡ and milk boiled with sugar.

“After their feast the gallant Bhaima chiefs, along with their ladies, joyfully commenced again to sing such choice delightful songs as were agreeable to the ladies. The Lord Upendra (Kṛishṇa) was pleased at night to order the singing of the *chhālikya* song which is called *Devagandharva*. Thereon Narada took up his Vinā of six octaves whereon could be played all the six musical modes (rāga) and every kind of tune, Kṛishṇa undertook to beat time with cymbals, and the lordly Arjuna took up a flute, while the delighted and excellent Apsarās engaged themselves in playing on the mridanga and other musical instruments. Then Rambhā, the accomplished actress,

* *Udarsa*. The commentator Nīlakanṭha, takes this word for drinking goblets. Wilson in his dictionary explains it to mean, “a relish, or something to promote drinking.” The last has the support of ancient lexicons.

† Rasāla is a kind of sherbet made with cream, curds, sugar and spices largely diluted with water.

‡ The commentator Nīlakanṭha has failed completely in explaining some of the words; *Kilāṭa* for instance, he takes to be an adjective meaning things made of buffalo milk, whereas its true meaning is cheese, and the word in the mutilated form *lāt* is still current in the vernacular for decomposed or curdled milk. The two words preceding it in the text are *Uvāṇḍantān*, *śrāṇān*, salted and moist or juicy, i. e., salted plump cheese. The commentator, however, takes the word *arḍrān* for a noun meaning ginger comfits.

cheerfully rising from one side of the court delighted Rína and Janárdana by her acting and her exquisitely slender figure.

“Then Urvasí, of the sparkling eye, Hemá, Mis’rakés’í, Tilottamá, Menaká, and others, for the gratification of Kṛishṇa, acted and sang whatever was calculated to prove agreeable and pleasing to the company.” Here follows a eulogium on the Chhálíkya tune, which was sung in six octaves, and in various modes. The young and the old alike joined in the song, in order, evidently, to bring all the six octaves into play which no single human voice could compass. Originally, it was a spécialité in the concerts of Indra in heaven. On earth Balakava, Kṛishṇa, Pradyumna, Aniruddha and Sámiba were the most proficient in it, and they taught it to the other Yádavas. Songs for this tune, I understand from my young friend, Bábu Surendramohan Tagore, who has made the Hindu science of music his special study, and possesses a critical knowledge of the subject, were composed of lines of 26 syllables, and scanned in groups of four syllables, the first two being long, the next short, and the last circumflex. The measure of time (*tála*) for singing it was the same, *i. e.*, of two double instants, then one single instant, and lastly a triple instant, making together a measure of eight instants. This measure was called *Chachchatpūṭa*. The subject of the song was always something fierce and heroic. I annex at foot the Sanskrit quotations from the *Saṅgita Ratnávalí* and the *Saṅgita Darpaṇa* furnished me by my friend in support of his explanation.* On the conclusion of this song which was sung by different parties, and repeatedly encored, Kṛishṇa rewarded the dancing girls and the heavenly actresses, and the company broke up.

* सङ्गीतरत्नावल्यां तदुक्तं श्रवणान्तं श्रवणे श्रवणप्रत्यक्षे श्रवतवत्प्रतीयमानं मनः श्रोत्रमुखवहं मनोहरं श्रोत्रहरञ्च कालिकं कालिक एव कालिकः षोडशविधभुवकान्तर्गत-भुवकगीतविशेषं प्रजगिरे प्रजगुः श्यामनेपदमार्थः । कालिकलक्षणं सङ्गीतरत्नावल्यामुक्तं यथा,—

तालं चच्चतुष्टे वीर रौद्रयाः सकलार्थदः ।

षड्विंशत्यक्षरपदे ललितश्चालिको मतः ॥ इति ।

अस्यार्थः,—चच्चतुष्टे शिवस्य सद्योजात-वामदेवाघोर-तत्परुषेण ननामानि पञ्चवदनानि तेषामाद्यात् सद्योजातात् समुत्पन्ने पञ्चविधमार्गतालान्तर्गततालविशेषे तदुक्तं सङ्गीतदर्पणे ५ तालं चच्चतुष्टे ज्ञेयं गुरु द्वन्द्वं लघु त्रुतं । ६६ । उ. “सद्योज्ञवः शुक्लवर्णश्चच्चतुष्ट इतीरित” इति । वीररौद्रसंयोजकपदधिन्यासाश्रयः षड्विंशत्यक्षरयोजितः मनोहरो गीतविशेषः स एव कालिकः सङ्गीतवेदिभिरभिमत इत्येवार्थः ॥

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Native houses



Joboku, 3600 feet

Joboku, Chung

Langtung



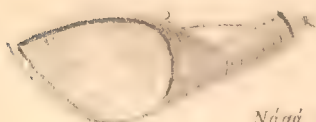
*'AK', or tattoo, of the BANPARAS.
MUTONS and JOBOKA CHANG.*



A Nag's Morung, or skull house (p. 19)



Nag's Dance (p. 19)



Nag's Jakoi



Hirong, to carry loads. The strap passes round the forehead.



Bamboo loops for weeding (p. 12)





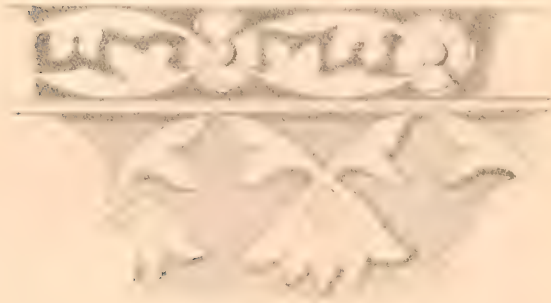
Naga with his dhuo climbing a tree



A NÁGÁ WOMAN with the DHÁO.
(the waistband or Mikla, 2 ft by 5 ½ inch)



The Rajah's Palace at Gargaon, Assam.

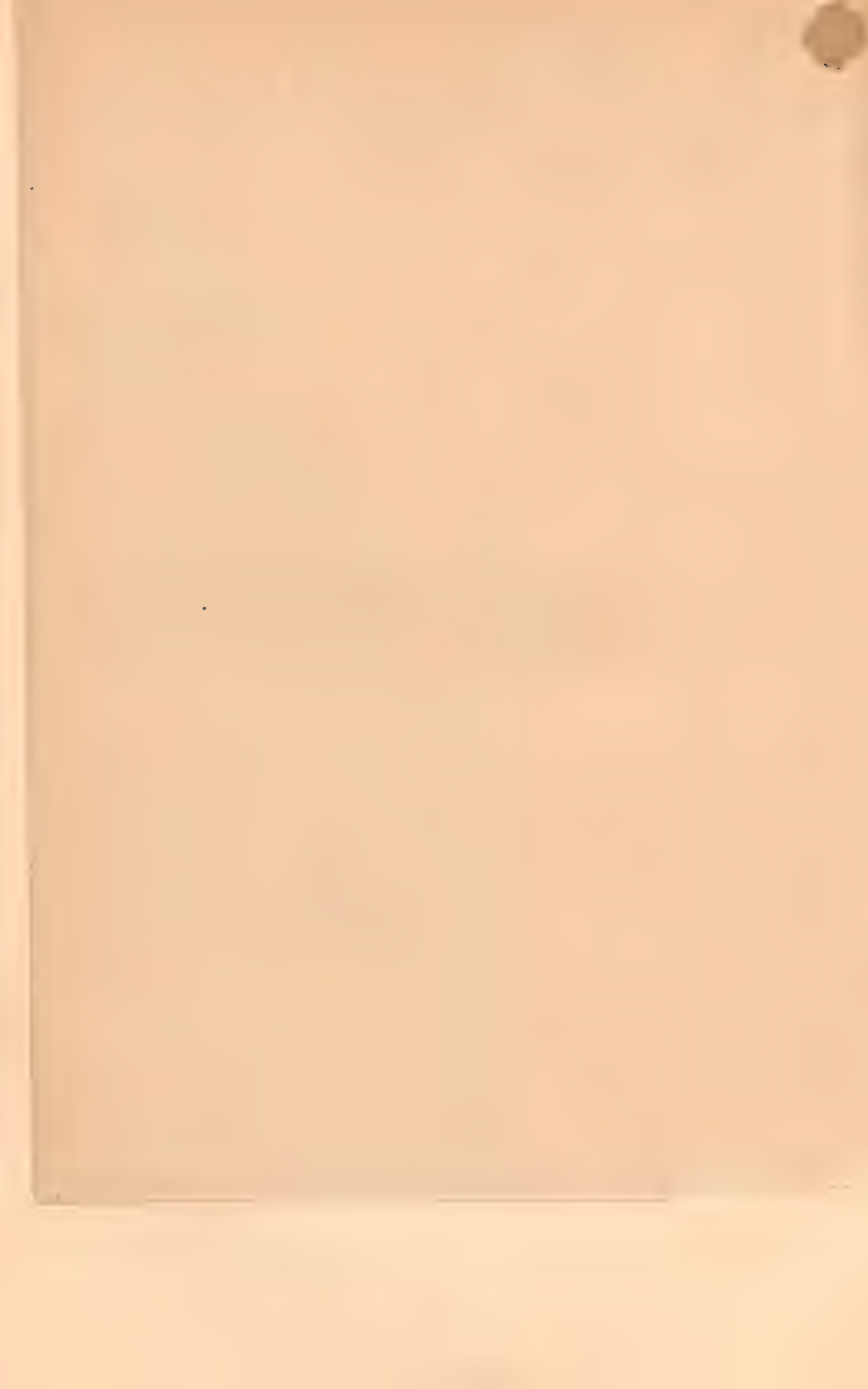


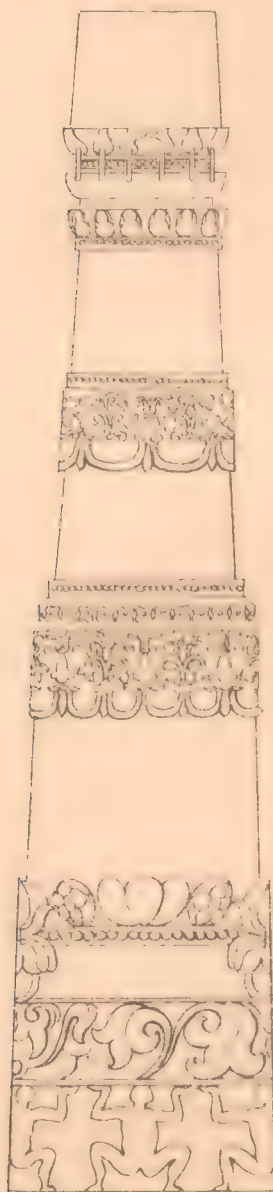
Stucco Ornaments in the Palace.



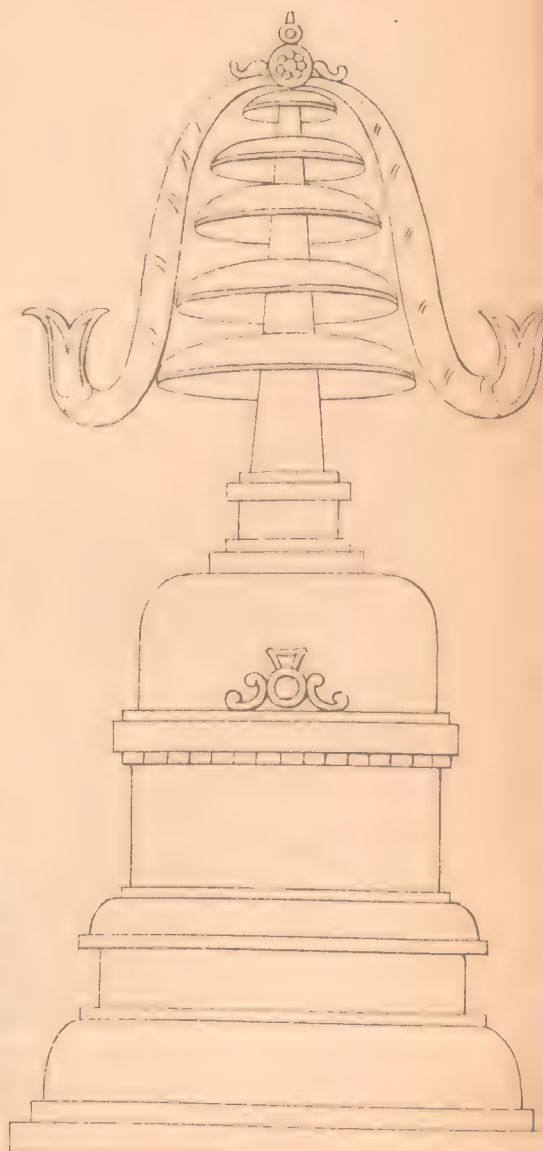


RESTORED ELEVATION OF THE GREAT NALANDA TEMPLE.



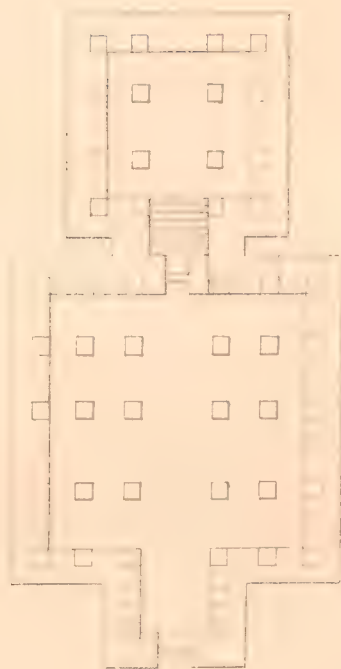


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2.

N^o 1 PILLAR AND CAPITAL, from the Vestibule of the great NĀLANDĀ TEMPLE.
N^o 2 STŪPA. Found in TITRAWAN.



Scale 10 feet to 1 in.

BUDDHIST TEMPLE ON THE BARMAN HILL RAJGIR

R I V E R S O N A

STREET LIGHT

STREET LIGHT

PLAN

TILLARAH

SURVEYED BY THE GOVERNMENT OF INDIA

OF THE

MONASTERIES

BY THE GOVERNMENT OF INDIA

CULTIVATION

HOUSE OF ANANDU PRASAD

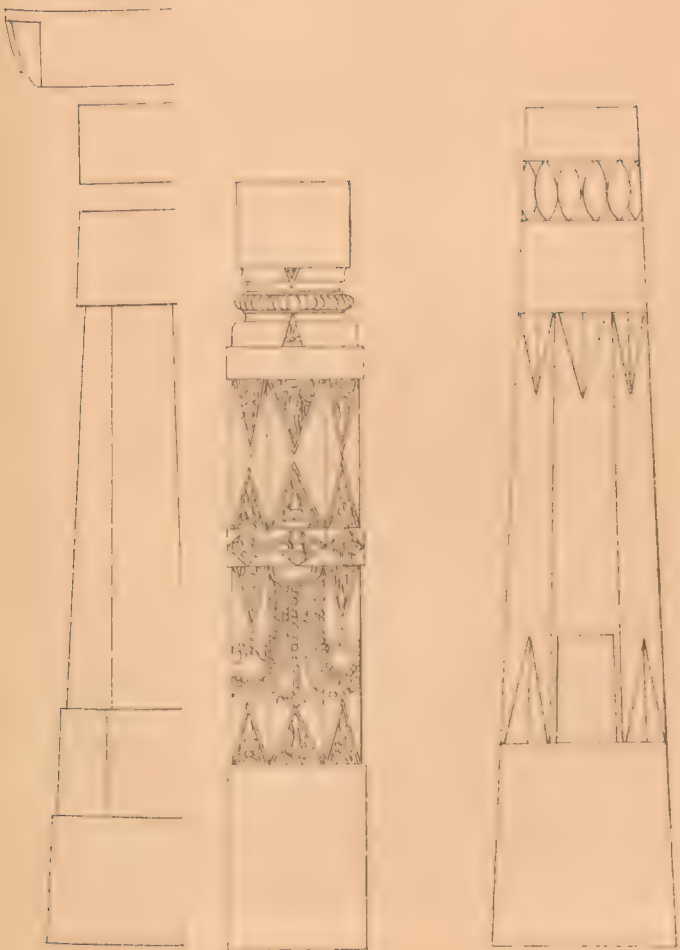
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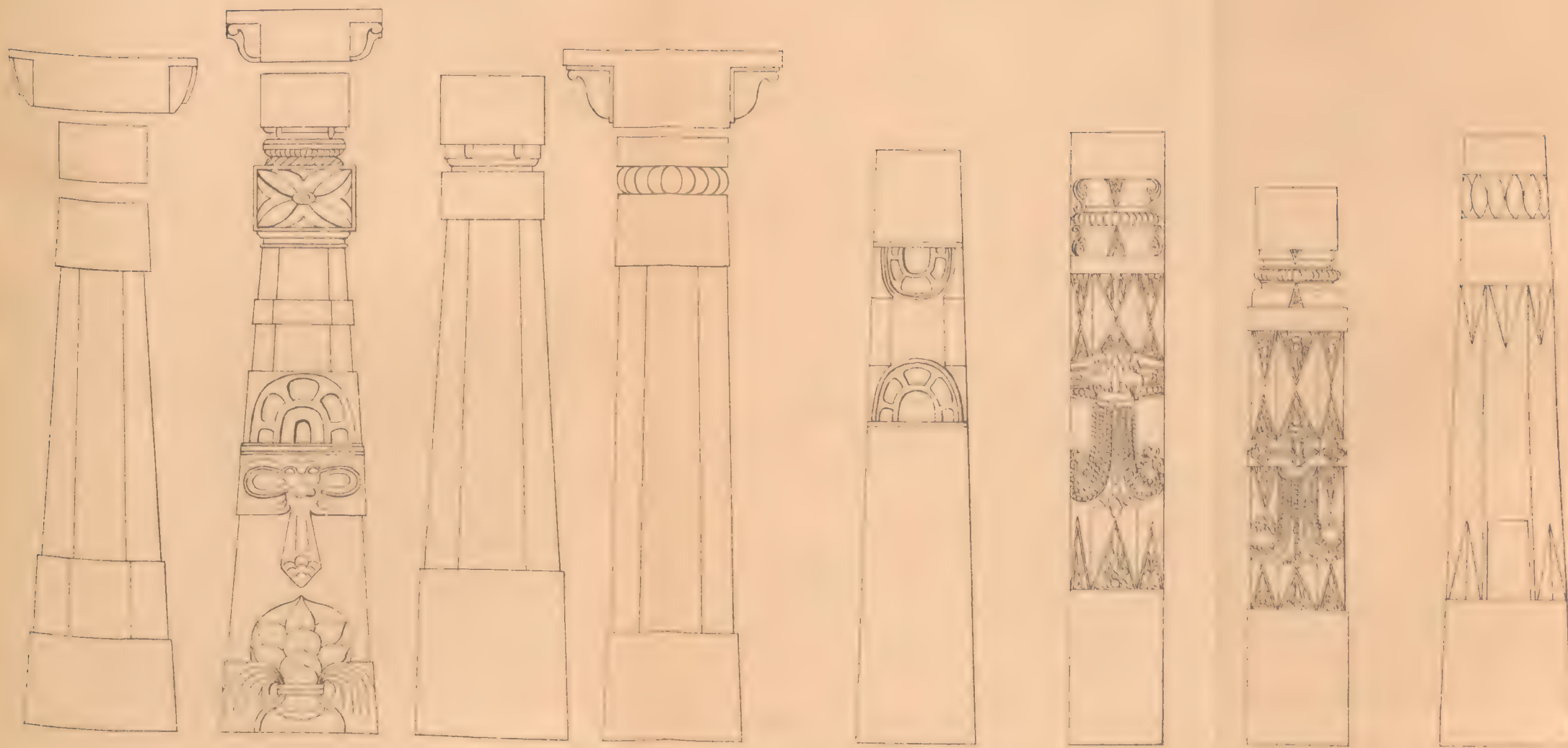
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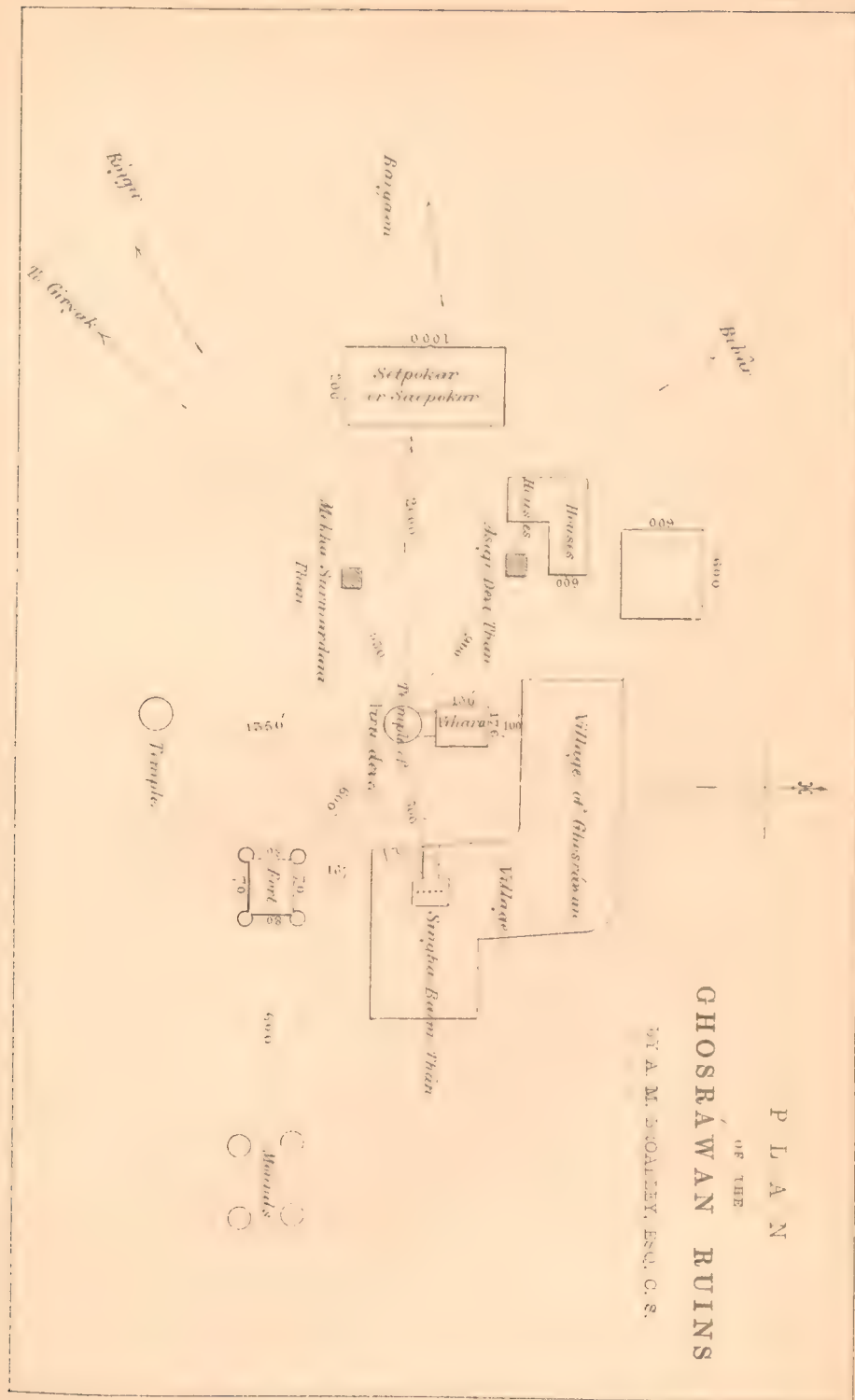
R I V E R K A T T A R





PILLARS from the Sunam Masjid at TILLAAH (Tillaahaka)
(Size $\frac{1}{2}$ of the Original).

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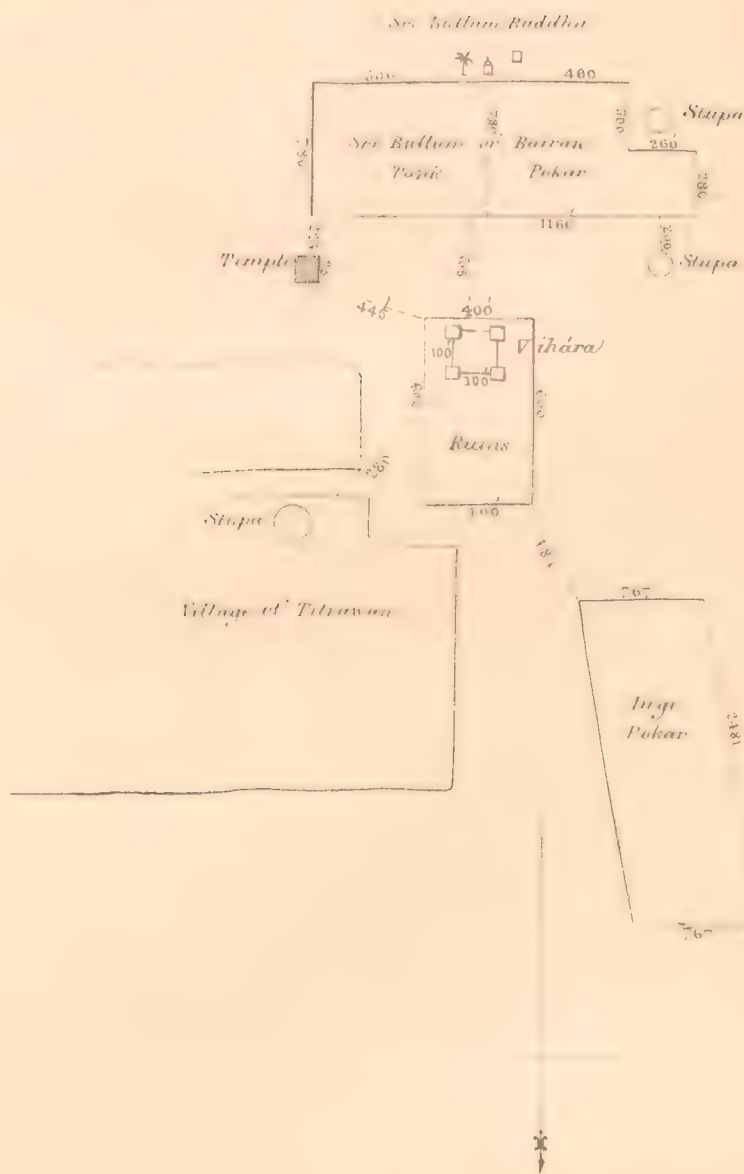
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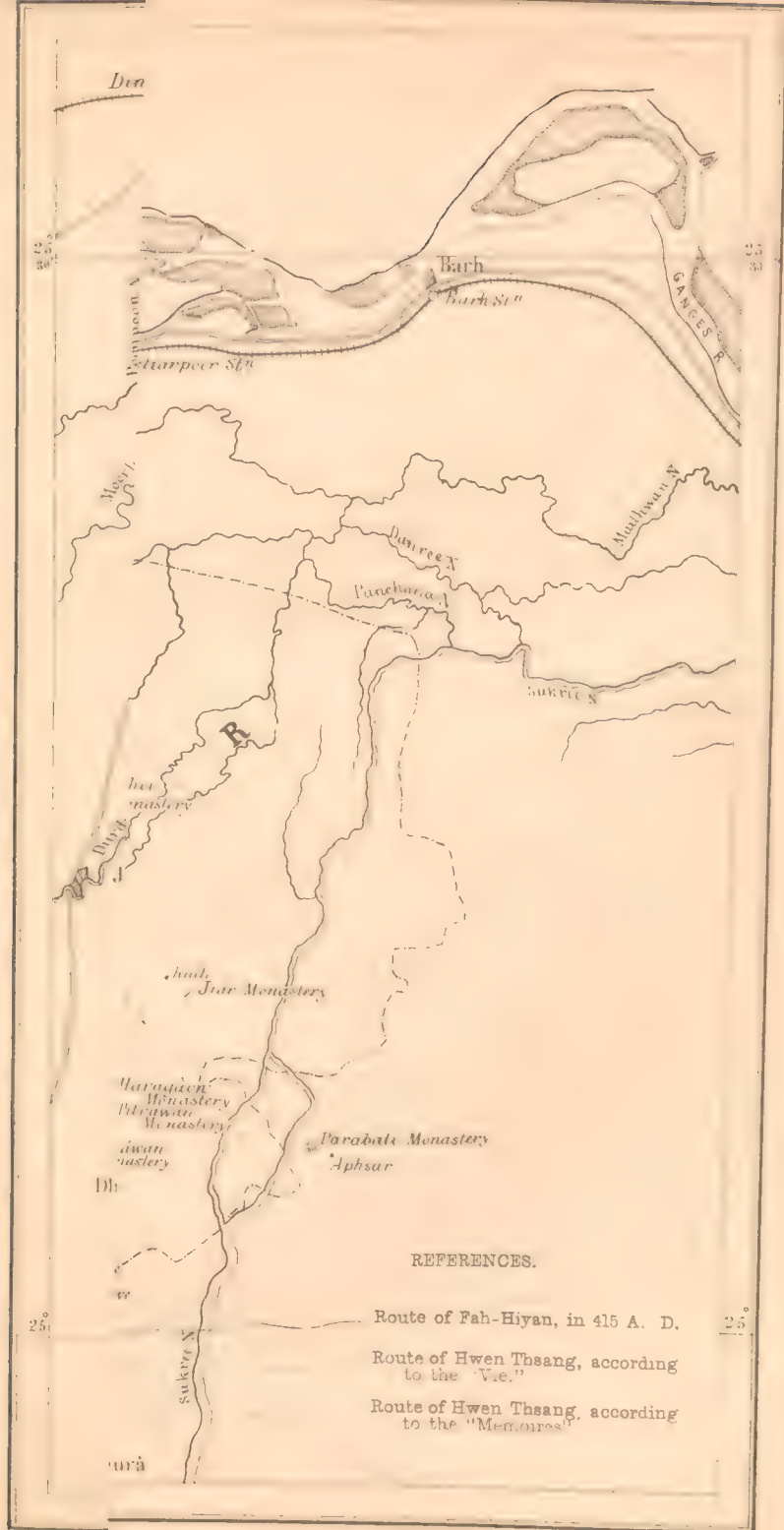
GHOSRAWAN RUINS

BY A. M. DODD, ESQ. C. S.

ROUGH PLAN OF THE RUINS OF TITRÁWAN MONASTERY.

BY A. M. BROADLEY, ESQ. C. S.







REFERENCES.

- Route of Fax-Hiyan, in 415 A. D.
- Route of Hwen Tshang, according to the "V.e."
- Route of Hwen Tshang, according to the "Memoires"

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“It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish, if such communications shall be long intermitted; and it will die away, if they shall entirely cease.” SIR WM. JONES.

~~~~~  
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1872.

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No. I,—containing pp. 1—116, with pls. i—iii,— was issued on 1st May, 1872.

No. II,—containing pp. 117—170, with pls. iv—viii,— was issued on 25th June, 1872.

No. III,—containing pp. 171—271, with pls. ix and x,— was issued on 12th November, 1872.

No. IV,—containing pp. 273—351, with pl. xi,— was issued on 22nd December, 1872.

SYNOPSIS OF SPECIES.

A. *With four barbels. (Pachystomus.)*

1. *Barilius rerio*, D. 2/7, A. 3/12, L. r. 26—28. With blue horizontal bands. India.
2. „ *piscatorius*, D. 2/7, A. $\frac{2-3}{11}$, L. l. 42. With 10 vertical bars. *Himalayas and Nipd.*
3. „ *radiolatus*, D. 2/8, A. 2/10, L. l. 56. Uniform. *Central India.*
4. „ *modestus*, D. 2/7, A. $\frac{2}{10-11}$, L. l. 43. Back dark, sides silvery. *Panjab.*
5. „ *Bleekeri*, D. 2/7, A. $\frac{2-3}{10}$, L. l. 43. Seven vertical bars. *Panjab.*
6. „ *shacra*, D. 217, A. 218, L. l. 53. Twelve vertical bars. *Bengal, N. W. Provinces and Asám.*
7. „ *bendelisis*, D. 2/7, A. 3/8, L. l. 43. Short vertical bars. *Southern India.*
8. „ *coca*, D. $\frac{3}{7-8}$, A. $\frac{2}{7-8}$, L. l. 42. Vertical bars. *Throughout India.*

B. *With two barbels. (Bendilisis.)*

9. „ *vagra*, D. 2/7, A. $\frac{3}{10-11}$, L. l. 42. Indistinct vertical bars. *Bengal and N. W. Provinces.*
10. „ *barila*, D. 2/7, A. 3/10, L. l. 43—46. With 14 or 15 vertical bars. *Bengal, Orissa.*
11. „ *nigrofasciatus*, D. 2/7, A. 2/11, L. r. 30. A dark lateral band. *Burma.*

C. *Without barbels. (Barilius.)*

12. „ *Bakeri*, D. 3/10, A. $\frac{2-3}{14}$, L. l. 38. A row of large spots. *Tra-vancore.*
13. „ *Canarensis*, D. 2/10, A. 2/13, L. l. 38. Two rows of spots. *Canara.*
14. „ *gatensis*, D. $\frac{2-3}{8}$, A. $\frac{3}{12-13}$, L. l. 40. With 15 vertical bars. *Western Ghâts and Neilgherries.*
15. „ *tileo*, D. 2/8, A. 2/12, L. l. 70. Two rows of spots. *Bengal and Asám.*
16. „ *papillatus*, D. 3/7, A. $\frac{3}{10-11}$, L. l. 39. From 7 to 9 vertical bands. *Orissa.*
17. „ *bola*, D. 3/7, A. 3/10, L. l. 38. Two rows of blotches. *Orissa, Bengal, Asám.*
18. „ *guttatus*, D. 2/7, A. 3/11, L. l. 44. Two rows of spots. *Burma.*
19. „ *interruptus*, D. 2/7, A. 2/12, L. l. 34, incomplete. Short vertical bars. *Hotha.*
20. „ *barna*, D. 2/7, A. 3/10, L. l. 42. Nine vertical bands. *Orissa, Bengal, Asám.*
21. „ *borelio*, D. 2/7, A. $\frac{2}{9-10}$. Silvery. *Bengal and N. W. Provinces.*
- *22. „ *hoalus*, D. 9, A. 10. Uniform. *N. W. Provinces.*

A. *With four barbels. (Pachystomus.)*1. *BARILIUS (Pachystomus) RERIO.*

Cyprinus rerio, Ham. Buch., Fish. Ganges, pp. 323, 390; *Cuv. and Val., xvi, p. 406.

Perilampus striatus, McClell., Ind. Cyp., pp. 290, 397, pl. 46, fig. 1, (from H. R. MS.)

Barilius rerio, *Günther, Catal., vii, p. 292.

Danio lineatus, Day, Proc. Zool. Soc., 1868, p. 198, and 1869, p. 378.

Poncha-geraldi. Uriah.

B. III. D. 2/7, P. 13, V. 8, A. 3/12, C. 19, L. 1. 26—28, L. tr. 6.

Length of head $1/5$, of caudal $1/4$, height of body $1/4$, of dorsal fin $2/13$, of the total length. — *Eyes*: diameter nearly $1/3$ of length of head, $1/2$ a diameter from end of snout, and 1 diameter apart. Lower jaw the longer; rostral barbels short, maxillary ones reaching the opercle. — *Teeth*: pharyngeal, crooked, pointed, 5, 3, 1/1, 3, 5. — *Fins*: dorsal commences opposite the anal, and slightly before the middle of the total length; dorsal and anal highest anteriorly; caudal deeply forked. — *Lateral line*: absent. — *Colours*: about four metallic blue lines along the sides and forming three bands on the caudal fin. Dorsal with a blue edging. Anal with three longitudinal blue bands.

Hab.—Bengal and Madras, attaining to about 2 inches in length. Hamilton Buchanan and McClelland give 17 rays as existing in the anal fin.

2. *BARILIUS (Pachystomus) PISCATORIUS.*

Opsarius piscatorius, McClell., Cal. Journ. Nat. Hist. 11, 1842, p. 582.

Barilius alburnus, Günther, Catal., vii, p. 299.

Charl, Panj.

B. III. D. 2/7, P. 16, V. 9, A. $\frac{2-3}{11}$, C. 19, L. 1. 42, L. tr. $8/4$,

Vert. 16/23.

Length of head $1/5$, of caudal $1/5$, height of body $1/5$ of the total length. — *Eyes*: diameter $2/7$ of length of head, 1 diameter from end of snout. The posterior extremity of the maxilla extends to beneath the middle of the orbit; lower jaw slightly the longer. Third suborbital bone twice as deep as the uncovered portion of the cheek below it. Humeral process very short. Rostral barbels nearly half as long as the head, maxillary pair very short. — *Teeth*: pharyngeal, crooked, 5, 3, 2/2, 3, 5. — *Fins*: dorsal higher than long, commencing midway between the posterior edge of the orbit and the root of the caudal, its last two rays being over the anal; pectoral not quite so long as the head; caudal deeply forked. — *Colours*: ten dark bands descend from the back to the lateral line; fins yellowish, the edge of the caudal stained greyish.

Hab.—Rivers in the Sub-Himalayas and Ganges, where it attains above five inches in length. Also Nipál and Sikkim. It does not appear im-

probable that specimens "*a—b*, $4\frac{1}{2}$ inches long, from the collection of the East India Company" now in the British Museum, may have been a portion of the ten typical specimens of *O. piscatorius*, McClelland, which were presented by him to the East India Museum, (see McClelland's list in Cal. Journ. of Nat. Hist.,) and now form types of *B. alburnus*, Günther.

3. *BARILIUS (Pachystomus) RADIOLATUS.*

Barilius radiolatus, Günther, Catal., vii, p. 287.

B. III. D. $\frac{2}{8}$, P. 15, V. 9, A. $\frac{2}{10}$, C. 19, L. 1. 56, L. tr. $\frac{5}{6}$.

Length of head $\frac{2}{9}$, height of body $\frac{2}{9}$ of the total length, excluding the caudal fin. The specimens in the British Museum are in a very bad state, having apparently been dried and subsequently placed in spirit by the Messrs. von Schlagintweit, or else when just caught immersed in alcohol which was too strong, and subsequently shaken about until their tails were destroyed.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout, and rather more apart. The posterior extremity of the maxilla extends to a little behind the front edge of the orbit; lower jaw projects slightly when the mouth is closed. The third suborbital bone nearly reaches the preopercular ridge. Humeral process short. Two pairs of short barbels.—*Fins*: the dorsal higher than long, commencing midway between the eye and the root of the caudal fin, its last ray not extending so far as to arise above the anal. Caudal apparently deeply forked.

Hab.—Central India.

4. *BARILIUS (Pachystomus) MODESTUS.*

? *Opsarius bicirrhatus*, McClelland, Cal. Journ. Nat. Hist., ii, 1842, p. 582

? *Barilius bicirrhatus*, *Günther, Catal., vii, p. 290.

B. III. D. $\frac{2}{7}$, P. 15, V. 9, A. $\frac{2}{10-11}$, C. 19, L. 1. 43, L. tr. $\frac{5\frac{1}{2}}{4\frac{1}{2}}$.

Length of head $\frac{2}{11}$, of caudal $\frac{2}{11}$, height of body $\frac{2}{9}$ of the total length.—*Eyes*: situated in the anterior half of the head, and $\frac{3}{4}$ of a diameter from the end of snout. Suborbital ring of bones wide, the third nearly touching the preopercular ridge. Upper jaw slightly the longer; the posterior extremity of the maxilla reaches to below the middle of the orbit. Rostral barbels extend to beneath the front margin of the eye; the maxillary pair minute. Humeral process short. *Fins*: dorsal two-thirds as high as the body below it, commencing midway between the posterior extremity of the caudal lobes and the snout: it is entirely, or all but the last ray, in advance of the anal. Pectoral nearly as long as the head, but not reaching the ventrals, which last extend half way to the base of the anal.—*Lateral line*: very slightly concave.—*Scales* deciduous, two and a half rows between the lateral line and the base of the ventral fin.—*Colours*: back brownish,

strongly defined from the silvery sides ; caudal edged with dark ; the other fins yellow.

Hab.—The Ravi river at Lahore, where it attains four inches in length and is not uncommon.

This fish differs in coloration from McClelland's, which, he observes, has nine incomplete bars on the sides. The reason of this may be, that his specimens were obtained from the Khyber pass and Kabul river, where coloration is probably more vivid ; as, however, the species possesses a pair of minute maxillary barbels, McClelland's name, (provided both are identical), is a misnomer.

5. *BARILIUS (Pachystomus) BLEEKERI.*

B. III. D. $\frac{2}{7}$, P. 13, V. 9, A. $\frac{2-3}{10}$, L. 1. 43, L. tr. $\frac{7\frac{1}{2}}{5\frac{1}{2}}$.

Length of head $\frac{1}{5}$, of caudal. 1.6, height of dorsal 1.7, of body $\frac{1}{5}$ of the total length.—*Eyes* : diameter $\frac{1}{3}$ of length of head, $\frac{3}{4}$ of a diameter from end of snout. Lower jaw slightly the longer, having pores on its lower surface, but none on the snout ; the posterior extremity of the maxilla extends to beneath the middle of the orbit. Third suborbital bone not quite half as wide as the uncovered portion of the cheek below it. Humeral process small. Four long barbels, the rostral extending to below the posterior third of the orbit, the maxillary to about the same place. *Fins* : dorsal rather higher than its base is long, but not so high as the body below it, commencing midway between the snout and middle of the length of the caudal fin, its last one or two rays being over the anal ; the lower caudal lobe slightly the longer. Pectoral as long as the head without the snout, and extending three-fourths of the distance to the ventral which does not reach the anal.—*Scales* : with several raised lines on each ; two and a half rows between the lateral line and base of the ventral fin.—*Colours* : silvery, becoming white beneath, and having a purplish tinge along the back ; seven short vertical blue bars along the middle of the side. Fins orange ; caudal stained on its outer edge.

Hab.—A river at Gangrete, which joins the Beas in the Sub-Himalayan range. It is a small species and out of six specimens obtained the largest was only three inches in length, and was said to be adult ; it was full of ova.

6. *BARILIUS (Pachystomus) SHACRA.*

Cyprinus shacra, Ham. Buch., Fish. Ganges, pp. 271, 385.

Barbus schagra, *Cuv. and Val., xvi, p. 196.

Opsarius cirrhatus, McClell., Indian Cyp., pp. 296, 416, pl. 56, fig. 5, (from H. B. MS.)

Shacra cirrhatus, Günther, Catal. vii, p. 294.

Gürha, Panj.

B. III. D. $\frac{2}{7}$, P. 15, V. 8, A. 2, 8, C. 19, L. 1. 53, L. tr. 11/9.

Length of head, of caudal and of height of body each $\frac{2}{9}$, of the dorsal fin $\frac{2}{13}$ of the total length.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout. Maxillary barbels as long as the eye, the rostral slightly longer. The maxilla reaches to below the anterior margin of the orbit; third suborbital bone as wide as the uncovered portion of the cheek below it. Humeral process extends to rather behind the origin of the pectoral fin.—*Teeth*: pharyngeal, 5, $\frac{1}{4}$, 5, crooked.—*Fins*: dorsal commences midway between the posterior margin of the orbit and the base of the caudal fin, its last ray is over the first of the anal. The four outer pectoral rays strong. Caudal deeply forked.—*Gill rakers* absent.—*Lateral line*: goes to the centre of the base of the caudal fin.—*Colours*: back olive, rest of the body pinkish silvery; about twelve incomplete bars go from the back downwards towards the lateral line. The lower two-thirds of the vertical fins stained.

Hab.—Bengal, Bihâr, N. W. Provinces and Asâm. The species is said to attain 5 inches in length.

7. *BARILIUS (Pachystomus) BENDELISIS.*

Cyprinus bendelisis, Buchanan, Journ. Mysore, iii, p. 345, pl. 32, and Fishes of Ganges, pp. 270, 385; *McClelland, Ind. Cyp., pp. 297, 418.

Gobio bendelisis, *Cuv. and Val., xvi, p. 316.

Barilius bendelisis, Günther, Catal., vii, p. 288.

B. III. D. $\frac{2}{7}$, P. 13, V. 9, A. $\frac{3}{8}$, C. 19, L. 1. 43, L. tr. $\frac{8}{4}$.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{5}$, height of body $\frac{2}{9}$, of dorsal fin $\frac{1}{6}$ of the total length.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout and apart. No pores on snout; the posterior extremity of the maxilla reaches to below the anterior third of the orbit. The third suborbital bone more than twice as high as the uncovered portion of the cheek below it. Four short barbels. Humeral process styliform and scarcely elongated.—*Fins*: dorsal much higher than its base is long, commencing slightly nearer the snout than the posterior extremity of the caudal, and not extending to over the anal; caudal forked, lobes rather pointed.—*Lateral line*: with $2\frac{1}{2}$ rows between it and the ventral fin.—*Colours*: silvery, with greenish vertical bars, descending towards the lateral line; dorsal fin stained greyish in its centre, externally white; caudal likewise stained grey. Some of the scales have occasionally a black spot at their bases. Humeral process silvery.

Hab.—Mysore and Southern India, attaining $4\frac{1}{2}$ inches in length.

8. *BARILIUS (Pachystomus) COCSA.*

Cyprinus cocha, Ham. Buch., Fish. Ganges, pp. 272, 385, pl. 3, fig. 77.

„ *chedra*, Ham. Buch., l. c. pp. 273, 385; Gray and Hardw., Ill. Ind. Zool., (from H. B. MS.); McClell., Ind. Cyp. pp. 293, 409; *Cuv. and Val., xvi, p. 421.

„ *tila*, Ham. Buch., l. c. pp. 274, 385; *Cuv. and Val., xvi, p. 422.

Leuciscus cocea, *branchiatus*, et *brachiatus*, McClell., Ind. Cyp., pp. 293, 294, 409, 411, pl. 42, fig. 5, *Cuv. and Val., xvi, p. 469.

Barbus cocea, Cuv. and Val., xvi, p. 197.

Cyprinus apiciatus, Val., in Jacq. Voy. Ind. Or., Atl., t. 15, fig. 3; McClelland Ind. Cyp., pp. 293, 408.

Leuciscus apiciatus, Cuv. and Val., xvii, pp. 351, 495, pl. 510.

Opsarius dualis (?) Jerdon, M. J. L. and S., 1849, p. 330.

Chedrus cocea, Stein., Sitz. Ak. Wiss. Wien, 1867, lvi.

Barilius cocea, Günther, Catal., vii, p. 288.

Khoksa, Beng. *Puckwahree*, Panj. *Jokra*, Mah.

B. III. D. $\frac{2}{7-8}$, P. 13, V. 9, A. $\frac{2}{7-8}$, C. 18, L. 1. 42, L. tr. $\frac{8\frac{1}{2}-9}{5}$.

Length of head $\frac{1}{4}$, of caudal $\frac{2}{9}$, height of body nearly $\frac{1}{4}$, of dorsal fin $\frac{1}{6}$ of the total length.—*Eyes*: diameter $\frac{1}{4}$ of length of head, 1 diameter from end of snout, and $1\frac{1}{4}$ apart. In large specimens the snout is generally covered with pores. The posterior extremity of the maxilla extends to below the anterior third of the orbit. Third suborbital bone as wide as the uncovered portion of the cheek below it. Humeral process generally very broad, and posteriorly produced in a lancet shaped form, more or less elongated in different specimens. Four short barbels.—*Teeth*: pharyngeal, 5, 4, $2\frac{1}{2}$, 4, 5.—*Fins*: dorsal much higher than its base is long, it commences midway between the snout and the centre of the caudal fin, and does not extend to over the anal; caudal forked, lower lobe the longer.—*Lateral line*: $2\frac{1}{2}$ rows of scales between it and the base of the ventral fin.—*Colours*: silvery shot with purple; back of a slaty grey descending in bars towards the lateral line and most distinct in immature specimens. Each scale in adults with a black spot at its base, and two on each forming the lateral line. Fins whitish, tinged with orange. A grey margin to the dorsal and caudal, the lower lobe of which is sometimes stained black. Humeral process black-edged.

Hab.—Continent of India, not recorded from the Malabar coast. It attains 6 inches in length.

B. *With two barbels, (Bendilisis.)*

9. *BARILIUS (Bendilisis) VAGRA.*

Cyprinus vagra, Ham. Buch., Fish. Ganges, pp. 269, 385; *Cuv. and Val., xvi, p. 420.

Opsarius isocheilus, McClell., Ind. Cyp., pp. 298, 421, pl. 56, fig. 1. (H. B. MS.)

B. III. D. $\frac{2}{7}$, P. 15, V. 9, A. $\frac{3}{10-11}$, C. 19, L. 1. 42—45, L. tr. $\frac{6\frac{1}{2}}{4\frac{1}{2}}$.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{4}$, height of body $\frac{1}{4}$, of dorsal fin $\frac{2}{11}$ of the total length.—*Eyes*: diameter $\frac{1}{3}$ of length of head, $\frac{3}{4}$ of a diameter from end of snout, 1 diameter apart. The posterior extremity of the maxilla extends to below the middle of the orbit; the third suborbital

bone nearly touches the preopercular ridge. Two short rostral barbels. Humeral process short.—*Fins*: dorsal commences midway between the posterior margin of the orbit and the base of the caudal fin.—*Lateral line*: $1\frac{1}{2}$ rows between it and the base of the ventral fin.—*Colours*: silvery with a light band and indistinct vertical bars.

Hab.—Bengal and N. W. Provinces, attaining 5 inches in length.

10. *BARILIUS (Bendilisis) BARILA.*

Cyprinus barila, Ham. Buch., Fish. Gaug., pp. 267, 384; *Cuv. and Val., xvi, p. 418.

„ *chedrio*, Ham. Buch., l. c. pp. 268, 384; *Cuv. and Val., xvi, p. 419.

Opsarius anisocheilus, McClell., Ind. Cyp., pp. 298, 422, pl. 48, fig. 8.

Barilius morarensis, Günther, Catal., vii, p. 290.

„ *barila*, Günther, l. c. p. 291; Day, Proc. Zool. Soc. 1869, p. 378.

Gilland and Caedra, Beng. *Persee*, Hind.

B. III. D. $\frac{2}{7}$, P. 13, V. 9, A. $\frac{3}{10}$, C. 19, L. 1. 43—46, L. tr. $6\frac{1}{5}$.

Length of head $\frac{1}{5}$, of caudal nearly $\frac{1}{5}$, height of body $\frac{1}{4}$, of dorsal fin $\frac{1}{6}$ of the total length.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout and apart. The posterior extremity of the maxilla reaches to below the anterior third of the orbit. Third suborbital bone wide and nearly touching the preopercular ridge. Rostral barbels, small. *Teeth*: pharyngeal, crooked, pointed, 5, 4, 3/3, 4, 5.—*Fins*: dorsal commences midway between the posterior margin of the orbit and the base of the caudal fin. *Colours*: silvery, with fourteen or fifteen vertical blue bands in the middle third of the side of the fish.

Hab.—Bengal and Orissa, grows to 4 inches in length.

11. *BARILIUS (Bendilisis) NIGROFASCIATUS.*

Barilius nigrofasciatus, Day, Proc. Zool. Soc. 1869, p. 620.

? *Cyprinus chapatio*, Ham. Buch., pp. 324, 390, *Cuv. and Val., xvi, p. 416.

B. III. D. $\frac{2}{7}$, P. 15, V. 7, A. $\frac{2}{11}$, C. 19, L. 1. 30, L. tr. 7.

Length of head $\frac{2}{11}$, of caudal nearly $\frac{1}{3}$, height of body $\frac{2}{7}$ of the total length.—*Eyes*: diameter nearly $\frac{1}{2}$ of length of head, $\frac{1}{4}$ of a diameter from end of snout, 1 diameter apart. Lower jaw prominent. No rostral barbels apparent, the maxillary extend to below the middle of the orbit.—*Fins*: dorsal situated over the first portion of the anal, and midway between the posterior extremity of the orbit and the base of the caudal, which last is lunated.—*Lateral line*, absent.—*Colours*: very similar to *B. verio*, H. B. A dark band passes along the side of the body, and a second dotted line below it. Dorsal and anal spotted with black in lines. In some specimens the body is intensely blue.

Hab.—Pegu and Mouhmein. Out of 20 specimens none exceeded $\frac{7}{10}$ of an inch in length.

C. *Without barbels (Barilius).*12. *BARILIUS BAKERI*, Pl. I, Fig. 2.

Barilius Bakeri, Day, Proc. Zool. Soc., 1865, p. 305, and Fish. Malabar, p. 218, pl. 18.

Pteroparion Bakeri, Günther, Catal. vii, p. 284.

B. III. D. $\frac{3}{10}$, P. 15, V. 9, A. $\frac{2-3}{14}$, C. 17, L. 1. 38, L. tr. 9/4.

Length of head 1/4, of caudal 2/9, height of body 2/7, of dorsal 1/6 of the total length. — *Eyes*: diameter about 1/4 of length of head, 1 diameter from end of snout, 1 1/2 diameters apart. Mouth compressed, lower jaw the longer, the posterior extremity of the maxilla extends to nearly below the centre of the orbit. Some pores exist along the margin of the lower lip, on the snout, and on the anterior edge of the preorbital. No barbels. — *Teeth*: pharyngeal, curved and pointed, 5, 4, 2 2, 4, 5. — *Fins*: dorsal commences nearly midway between the end of the snout and the base of the caudal, extending to above the fourth anal ray; caudal forked, lower lobe very slightly longer. — *Lateral line*: 2 rows of scales between it and base of the ventral fin. — *Colours*: greyish becoming white on the abdomen. A row of large bluish spots along the side. Dorsal, anal, and pectoral fins margined with white, and having dark grey bases. Caudal, grey in the centre.

Hab. Hill ranges of Travancore, whence I received several specimens collected by the Rev. H. Baker. It attains six inches in length.

13. *BARILIUS CANARENSIS*.

Opsarius Canarensis, Jerdon, M. J. L. and S., 1849, p. 329.

Barilius Canarensis, Day, Proc. Zool. Soc., 1870, p. 374.

B. III. D. 2/10, P. 15, V. 9, A. $\frac{2}{13}$, C. 21, L. 1. 38, L. tr. 9/4.

Length of head 2/9, of caudal 2/9, height of body 1/4 of the total length. — *Eyes*: diameter 1/4 of length of head, more than 1 diameter from end of snout. This species is very similar to the *B. gatusensis*, C. and V., differing however in a few points: less rays in the dorsal fin, the lower caudal lobe decidedly the longer; the dorsal fin commences midway between the snout and the base of the caudal; the lower jaw the wider, the maxillary extends to below the anterior margin of the orbit. No barbels. — *Lateral line*: 2 1/2 rows between it and the base of the ventral fin. — *Colours*: greenish above, golden on the sides, a double row of large green spots along the body as far as to above the base of the anal fin where they become confluent. Fins grey, with broad white margins.

Hab. — Canara on the Western coast: attaining 6 inches in length.

14. *BARILIUS GATENSIS.*

Leuciscus gatensis, Cuv. and Val., xvii, p. 309, pl. 503.

Opsarius gatensis, *Bleeker, Pro. Cyp., p. 288.

„ *Malabaricus*, *Jerdon, M. J. L. and S. 1849, p. 328.

Barilius gatensis, Günther, Catal. vii, p. 291; Day, Proc. Zool. Soc. 1870, p. 378.

Barilius vagosus, Day, Proc. Zool. Soc. 1867, p. 294; Günther, Catal. vii, p. 291.

Aart-candee, Tam. “River carp.”

B. III. D. $\frac{2-3}{8}$, P. 15, V. 9, A. $\frac{3}{12-13}$, C. 18, L. 1. 40, L. tr. 8/5.

Length of head nearly $\frac{1}{4}$, of caudal a little above $\frac{1}{6}$, height of body $\frac{1}{4}$, of dorsal $\frac{1}{8}$ of the total length.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout, $1\frac{1}{4}$ diameters apart. Cleft of mouth extending to below the centre of the orbit. The third suborbital bone is about three times as broad as the uncovered portion of the cheek below it. The anterior portion of the snout and the sides of the jaws covered with large glands; a few more likewise on the lower jaw. No barbels.—*Teeth*: pharyngeal, crooked, pointed, 5, 4, $2\frac{1}{2}$, 4, 5.—*Fins*: dorsal commences midway between the end of the snout and the middle of the caudal fin, extending to above the third anal ray. Caudal moderately lobed, the lower very slightly the longer.—*Lateral line*: 2 rows of scales between it and the base of the ventral fin.—*Colours*: silvery grey with about 15 vertical bars descending from the back. Dorsal and anal with dark bases and light margins. The females and young generally have smooth scales, whereas most of the adult males have one or more rough spots on each.

Hab.—Western Ghâts and Neilgherry hills, attaining 6 inches in length.

15. *BARILIUS TILEO.*

Cyprinus tileo, Ham. Buch., Fish. Gang. pp. 276, 385: *Cuv. and Val., xvi, p. 426.

Opsarius maculatus, McClell., Ind. Cyp. pp. 297, 417, pl. 47, f. 4.

„ *brachialis*, McClell., loc. cit. pp. 297, 418, pl. 48, fig. 6; *Cuv. and Val. xvi, p. 471.

Barilius tileo, Steind., Sitz. Ak. Wiss. Wien, 1867, lvi; Günther, Catal. vii, p. 287.

Tilei, Asám.

B. III. D. $2/8$, P. 15, V. 9, A. $\frac{2}{12}$, C. 19, L. 1. 70, L. tr. $14/5$.

Length of head $\frac{2}{9}$, of caudal $\frac{2}{11}$, height of body $\frac{2}{7}$ of the total length. The posterior extremity of the maxilla extends to below the anterior margin of the orbit. The third suborbital bone is more than twice as broad as the uncovered portion of the cheek below it. No barbels.—*Colours*: two rows of greenish blue spots along the sides.

Hab.—Bengal and Asám; attaining 8 inches in length.

16. *BARILIUS PAPILLATUS.*

Day, Proc. Zool. Soc. 1869, p. 378.

B. III. D. $\frac{3}{7}$, P. 15, V. 9, A. $\frac{3}{10-11}$, C. 21, L. 1. 39, L. tr. $\frac{7\frac{1}{2}-8\frac{1}{2}}{6\frac{1}{2}}$.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{5}$, height of body $\frac{2}{7}$, of dorsal fin $\frac{2}{11}$, of the total length.—*Eyes*: diameter $\frac{1}{3}$ of length of head, nearly 1 diameter from end of snout. Third suborbital bone thrice as deep as the uncovered portion of the cheek below. Humeral process rather narrow. The posterior extremity of the maxilla reaches to below the anterior margin of orbit. No barbels.—*Fins*: dorsal commences midway between the posterior margin of the orbit and the base of the caudal, its last ray is thickened and reaches the caudal when laid flat. The inner rays of the ventral are likewise thickened. Caudal with rounded lobes.—*Scales*, with a few elevated spots on each.—*Lateral line*: $3\frac{1}{2}$ rows of scales between it and the base of the ventral fin.—*Colours*: yellowish, the back grey, and from seven to nine broad and deep blue bands from the back to the abdominal profile. Dorsal fin stained grey in its upper third and caudal in its last third.

Hab.—Cossye river; attaining 3 inches in length. A variety exists in the Mahanuddi with the eye somewhat smaller, and the opercle narrower, but in other respects it agrees with the typical form. Also found at Birbhûm in Bengal, where it is tolerably abundant in the Mora river.

17. *BARILIUS BOLA.* Pl. I, Fig. 3.

Cyprinus bola, Ham. Buch., Fish. Gang., pp. 274, 385; *Cuv. and Val., xvi, p. 423.

" *goha*, Ham. Buch., loc. cit. pp. 275, 385; Gray and Hard. (from H. B. MSS.); *Cuv. and Val. xvi, p. 424.

Opsarius gracilis, McClell., Ind. Cyp., pp. 297, 419, pl. 47, fig. 1.

" *megastomus*, McClell., loc. cit., pp. 298, 420, pl. 48, fig. 5.

Leuciscus salmoides, Blyth, J. A. S. of B. 1858, p. 289.

Barilius goha, Steind., Sitz. Ak. Wiss. Wien, 1867, lvi.

Bola goha, Günther, Catal. vii, p. 293.

Opsarius goha, Day, Proc. Zool. Soc. 1869, p. 379.

Bugguah, Uriah. *Korang*, Asám. *Bola*, Beng. *Buggarah*, Hind.

B. III. D. $\frac{3}{7}$, P. 13, V. 9, A. $\frac{3}{10}$, C. 19, L. 1. 88, L. tr. $\frac{12-15}{9-11}$.

Length of head $\frac{2}{9}$, of caudal $\frac{2}{11}$, height of body nearly $\frac{1}{5}$, of dorsal fin $\frac{1}{8}$ of the total length.—*Eyes*: diameter $\frac{1}{5}$ to $\frac{1}{6}$ of length of head, $1\frac{1}{3}$ diameters from end of snout, and apart. Dorsal profile rather more convex than the abdominal. Head compressed, snout pointed, a well developed knob on symphysis of the lower jaw. Suborbital ring of bones wide, especially the third which is wider than the opercle. Mouth deeply cleft, the posterior extremity of the maxilla extending nearly one diameter of the

orbit behind the posterior margin of the eye. No barbels.—*Fins*: dorsal commences midway between the origin of the ventral and anal fins, its last ray being over the first of the anal. Caudal lobed, the lower lobe slightly the longer.—*Colours*: silvery with two or more vertical rows of bluish blotches along the sides, the upper being about twelve to fifteen, and the lower intermediate; some spots also on the head. Lower half of the dorsal fin slightly grey. Caudal orange, stained with grey and black. Pectoral, ventral, and anal orange, the colours being somewhat similar to those of a trout; it often goes by that name amongst Europeans.

Hab.—Orissa, Bengal, N. W. Provinces and Asám, attaining a foot in length.

18. *BARILIUS GUTTATUS.*

Opsarius guttatus, Day, Proc. Zool. Soc. 1869, p. 620.

B. III. D. 2/7, P. 15, V. 9, A. 3/11, C. 17, L. 1. 44, L. tr. 9/5.

Length of head 2/9, of caudal 2/9, height of body 2/11, of dorsal fin 2/13 of the total length.—*Eyes*: diameter nearly 1/5 of length of head, 1½ diameters from end of snout and apart. Cleft of mouth deep, extending nearly one diameter behind the orbit. A well developed knob above symphysis of lower jaw. Suborbitals very broad, more especially the last which is nearly behind the vertical from the posterior margin of the orbit. No barbels.—*Fins*: dorsal commences midway between the posterior extremity of the orbit and the base of the caudal, being opposite the interspace between the ventral and anal fins. Caudal forked, lower lobe slightly the longer.—*Colours*: silvery, shot with purple, two rows of blue spots along the side. Lower caudal lobe orange, its upper lobe with a dark edging.

Hab.—Irawadi from Prome to Mandalay; attaining 7 inches in length.

19. *BARILIUS INTERRUPTUS.*

Barilius interruptus, Day, Proc. Zool. Soc. 1869, p. 559.

B. III. D. 2/7, P. 10, V. 7, A. 2/12, C. 19, L. 1. 34, L. tr. $\frac{6\frac{1}{2}}{4\frac{1}{2}}$.

Length of head 2/9, of caudal 1/5, height of body 2/7, of dorsal fin 2/11 of the total length.—*Eyes*: diameter 2/5 of length of head, rather more than 1/2 a diameter from end of snout, and 1 diameter apart. Lower jaw slightly the longer. Third suborbital bone about twice as wide as the uncovered portion of the cheek below it. The posterior extremity of the maxilla extends to below the anterior third of the orbit. Humeral process very slightly developed. No barbels.—*Teeth*: pharyngeal, uncinatæ, 5, 4, 2 2 4, 5.—*Fins*: dorsal commences in advance of the anal, and midway between the posterior margin of the opercle, and the base of the caudal fin, which latter is forked in its posterior three-fourths.—*Lateral line*: descends

gently for five scales, then more abruptly for two more, and having been continued along five more scales to above the ventral fin, it ceases.—*Colours*: silvery, with short vertical bars along the middle of the side. The upper scales with black spots.

Hab.—Hotha, whence Dr. J. Anderson brought many specimens measuring up to 2 inches in length, having collected them when attached to the Yunán expedition.

20. BARILIUS BARNA.

Cyprinus barna, Ham. Buch., Fish., Ganges, pp. 268, 334; *Cuv. and Val. xvi, p. 419.

Opsarius fasciatus, McClell., Ind. Cyp., pp. 269, 417, pl. 48, fig. 9.

„ *latipinnatus et acanthopterus*, McClelland, Ind. Cyp., pp. 298, 422,† pl. 48, fig. 7; *Cuv. and Val. xvi, p. 472.

Barilius barna, Günther, Catal. vii, p. 290; Day, Proc. Zool. Soc. 1869, p. 378.

Bahri, Uriah. *Balisundree*, Asámese.

B. III. D. $\frac{2}{7}$, P. 13, V. 9, A. $\frac{3}{10}$, C. 19, L. 1. 42, L. tr. $\frac{8-9}{5}$.

Length of head 1/5, of caudal 1/5, height of body 2/7, of dorsal fin 1/6 of the total length. *Eyes*: diameter 2/5 of length of head, 2/3 of a diameter from end of snout, 1 diameter apart. Third suborbital bone twice as broad as the uncovered portion of the cheek below it. Humeral process slightly developed. The posterior extremity of the maxilla reaches to beneath the anterior third of the orbit.—*Fins*: the dorsal commences rather nearer the snout than the base of the caudal, its posterior rays, when laid flat, merely reach half way to the base of the caudal fin.—*Lateral line*: 2½ rows of scales between it and the base of the ventral fin.—*Colours*: nine bluish black vertical bands on the body. Dorsal and caudal fins tipped with black.

Hab.—Orissa, Bengal, Asám, attaining 4 inches or more in length. A variety exists in the Mahanuddi river, which has the dorsal fin more elevated, the eye slightly larger, and the cleft of the mouth a little greater.

21. BARILIUS BORELIO.

Cyprinus borelio, Ham. Buch., Fish. Ganges, pp. 336, 392; *Cuv. and Val., xvi, p. 443.

„ *solio*, Ham. Buch., loc. cit. pp. 337, 392; *Cuv. and Val., xvi, p. 444.

Boreli and *Soli*, Beng.

B. III. D. 2/7, P. 15, V. 9, A. 2/9, C. 18, L. 1. 39, L. tr. 7/7.

Length of head nearly 1/5, of caudal 1/5, height of body 1/5 of the total length.—*Eyes*: diameter 2/7 of length of head, 1 diameter from end of

† McClelland in his errata directs *O. latipinnatus* to be substituted at p. 422 for *O. acanthopterus*.

snout. Suborbital ring of bones broad, the third nearly covering the cheek. The posterior extremity of the maxilla reaches to below the anterior third of the orbit. No barbels. — *Fins* : dorsal arises midway between the eye and the base of the caudal, its anterior rays as long as the head without the snout, the posterior rays extend half way to the caudal fin which is lobed.—*Scales* : $2\frac{3}{4}$ rows between the lateral line and the base of the ventral fin.—*Colours* : silvery, above tinged with green, lighter below ; fins yellowish, the upper half of the dorsal stained greyish. Eyes silvery.

Hab.—Gangetic provinces ; attaining 4 inches in length. The *Solio* is said to differ in its abdomen not being yellow, and having a scale-like appendant above both pectorals and ventrals.

22.* BARILIUS HOALIUS.

Cyprinus hoalius, Ham. Buch., Fish. Ganges, pp. 336, 392 ; *Cuv. and Val., xvi, p. 442.

Hayali, Beng.

B. III. D. 9, V. 9, A. 10.

"Form much compressed, straightish above and prominent below. * * * The head is small, the jaws equal in length, * * * the *lateral line* is bent parallel to the edge of the belly."—*Fins* : "The fin of the tail is divided into two lobes."—*Colours* : green above, silvery below.

Hab.—Rivers in Northern Bengal ; attaining six inches in length.

Genus. DANIO, Ham. Buch. sp. (see Pl. I.)

Perilampus sp., McClelland.

Paradanio et *Devario*, Bleeker.

Body compressed, abdomen rounded. *Pseudobranchiæ* present. *Mouth* narrow, directed obliquely upwards. *Suborbitals* broad. *Barbels* four, or two, or none. *Pharyngeal teeth* hooked, 5, 3, 2/2, 3, 5. *Dorsal fin* moderately elongated, its posterior rays being opposite the anal which is long. *Scales* of moderate size. *Lateral line* concave, passing to the lower half of the tail. *Gill rakers* short.

Geographical distribution.—These prettily marked little fish are found throughout India, Burma, and Ceylon.

SYNOPSIS OF SPECIES.

1. *Danio devario*, D. $\frac{8}{12-14}$, A. $\frac{3}{14-16}$, L. l. 41. No barbels. Orissa, Bengal, Assm.
2. „ *spinousus*, D. $\frac{2-3}{13}$, A. $\frac{3}{17}$, L. l. 52. No barbels, or a short rostral pair, One or two spines on the margin of the orbit. Pegu.
3. „ *aurilineatus*, D. $\frac{2}{12}$, A. $\frac{3}{15}$, L. l. 34—40. Rostral barbels. South Malabar.

4. „ *lineolatus*, D. $\frac{3}{10}$, A. $\frac{3}{14}$, L. 1. 33. Rostral and maxillary barbels. *Sikkim, Tenasserim.*
5. „ *dangila*, D. $\frac{2}{11}$, A. $\frac{3}{14}$. Two pairs of long barbels. *Bengal and Bihár.*
- *6. „ *chrysops*, D. 13, A. 20. No barbels. *Bengal.*
7. „ *Neilgherriensis*, D. $\frac{3}{9-10}$, A. $\frac{2}{11-12}$, L. 1. 35. Rostral and sometimes maxillary barbels. *Neilgherry Hills, Madras.*
8. „ *osteocephalus*, D. $\frac{2}{11}$, A. $\frac{3-4}{13}$. L. 1. 35—37. Rostral and usually maxillary barbels. *India and Ceylon.*
9. „ *æquipinnatus*, D. 13, A. 13, L. 1. 32.

1. DANIO DEVARIO.

Cyprinus devario, Ham. Buch., Fish. Ganges, pp. 341, 393, pl. 6, fig. 94; *Cuv. and Val., xvi, p. 446.

Perilampus devario, McClell., Ind. Cyp., pp. 288, 391, pl. 45, fig. 2.

Devario Macclellandii, *Bleeker, Proc. Cyp. p. 283.

Danio devario, *Günther, Catal. vii, p. 284; Day, Proc. Zool. Soc. 1869, p. 377.

Bonkuaso, Uriah; *Debari*, Beng.

B. III. D. $\frac{3}{12-14}$ (17), P. 13, V. 6, A. $\frac{3}{14-16}$, C. 19, L. 1. 41,

L. tr. 11/5.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{4}$, height of body $\frac{1}{3}$, of dorsal fin $\frac{1}{5}$ of the total length.—*Eyes*: diameters $\frac{1}{3}$ of length of head, $\frac{3}{4}$ of a diameter from end of snout, $1\frac{1}{4}$ diameters apart. Posterior extremity of maxilla extends to beneath the anterior margin of the orbit; lower jaw the longer. Third suborbital bone broad. No barbels. — *Fins*: dorsal commences slightly anteriorly to the anal, and midway between the anterior margin of the orbit and the base of the caudal. In some specimens from Asam the anal had 19 rays. In a few from the Garo Hills there are D. 2 17, A 2/17.—Caudal lunated.—*Lateral line*: $2\frac{1}{2}$ rows of scales between it and the base of the ventral fin.—*Colours*: greenish superiorly, silvery white inferiorly. The anterior part of the body is reticulated in its centre by steel-blue lines, divided from one another by narrow yellow bands. Three bluish lines are continued towards the caudal fin, where the two lower amalgamate, and passing upwards become lost on the superior half of the caudal fin.

Hab.—Orissa, Bengal, N. W. Provinces and Asam; attaining 4 inches in length.

2. DANIO SPINOSUS.

Day, Proc. Zool. Soc. 1869, p. 621.

B. III. D. $\frac{2-3}{13}$, P. 13, V. 7, A. $\frac{3}{17}$, C. 19, L. 1. 52, L. tr. 15/4.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{3}$ of the total length.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of

snout and apart. Body strongly compressed: a slight concavity over the occiput. Lower jaw prominent, having a strong hook fitting into an emargination in the upper jaw when the mouth is closed. In adults there is a sharp spine directed forwards above the anterior superior margin of the orbit, and a second broader and blunter before the centre of the anterior orbital margin. In immature examples these spines are equally sharp. No barbels.—*Fins*: the dorsal commences midway between the posterior extremity of the orbit and the base of the caudal, its first five or six rays are in advance of the anal. Caudal lunate.—*Lateral line*: $3\frac{1}{2}$ rows of scales between it and the base of the ventral fin.—*Colours*: silvery, with an ill-defined lateral band, and some vertical yellow lines in the anterior half of the body. Dorsal and anal greyish, with reddish margins anteriorly. In the immature there is a dark humeral spot, and a steel-blue lateral band goes to the centre of the caudal fin, which has a scarlet stripe along the last half of its centre.

Hab.—Pegu; attaining four inches in length.

3. DANIO AUROLINEATUS, Pl. I, Fig. 1.

Perilampus aurolineatus, Day, Proc. Zool. Soc. 1865, p. 306.

„ *aradano*, Day, Fishes of Malabar, p. 219, pl. xvii, fig. 2.

Danio malabaricus, Günther, Catal. vii, p. 283 (not Jerdon).

B. III. D. 2/12, P. 14, V. 7, A. 3/15, L. l. 34—40, L. tr. 8/4.

Length of head nearly $\frac{1}{5}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{3}$, of dorsal fin $\frac{1}{7}$ of the total length.—*Eyes*: diameter $\frac{1}{3}$ of length of head, $\frac{3}{4}$ of a diameter from end of snout, 1 diameter apart. Lower jaw anterior, having a distinct knob at its extremity. Rostral barbels present, half as long as the eye.—*Teeth*: pharyngeal, curved, pointed $\bar{5}$, 4, 1/1, 4, $\bar{5}$.—*Fins*: dorsal commences nearer the snout than the posterior extremity of the caudal fin, and opposite the anal. *Colours*: three or four steel-blue lines pass along the body.

Hab.—South Malabar, attaining 3 inches in length.

4. DANIO LINEOLATUS.

Leuciscus lineolatus, Blyth, J. A. S. of Bengal, 1858, p. 289.

Perilampus affinis, Blyth, loc. cit. 1860, p. 163.

Danio lineolatus, Günther, Catal. vii, p. 282.

B. III. D. 3/10, P. 13, V. 8, A. 3/14, C. 19, L. l. 33, L. tr. $7\frac{1}{3}$.

Length of head $\frac{1}{4}$, height of body $\frac{1}{4}$ of the total length.—*Eyes*: diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout. Barbels well developed, the rostral ones being nearly as long as the eye, and the maxillary one-third shorter.—*Colours*: a dusky spot behind the gill covers.

Three straight bluish bands, divided from one another by yellow ones, pass along the sides to the tail.

Hab.—Sikkim and Tenasserim provinces. Mr. Blyth gives D. 12, A. 14, for *D. lineolatus*, and D. 13, A. 16, for *D. affinis*: as, however, I find those numbers in the former, as does also Dr. Günther, Catal. vii, p. 282, I have considered that some error must have occurred.

5. DANIO DANGILA.

Cyprinus dangila, Ham. Buch., Fish. Ganges, pp. 321, 390; *Cuv. and Val. xvi p. 403.

Perilampus reticulatus, McClell., Ind. Cyp. pp. 290, 397, pl. 45, fig. 1, (from H. B.'s MSS.)

Danio dangila, *Bleeker, Atl. Ich. p. 29; *Günther, Catal., vii, p. 282.

B. III. D. $\frac{2}{10-11}$, P. 12, V. 7, A. $\frac{3}{14-15}$, C. 20, L. l. 38, L. tr. $\frac{7}{12}$.

Length of head $1/5$, of caudal $1/5$, height of body $2/7$ of the total length.—*Eyes*: diameter $1/3$ of length of head, $3/4$ of a diameter from end of snout. Lower jaw the longer, with a distinct knob at symphysis, mouth oblique. Rostral barbels a little shorter than the head; maxillary pair slightly longer.—*Fins*: the posterior dorsal rays are above the anterior ones of the anal. Caudal slightly emarginate.—*Colours*: back olive colour, abdomen silvery, sides with several narrow blue lines which in the anterior half, or two-thirds, of the body form a beautiful network; a dark spot behind gill covers. Anal fin with two or three blue stripes.

Hab.—Bengal and Bihár; grows to 5 or 6 inches in length. Darjiling.

6.* DANIO CHRYSOPS.

Leuciscus chrysops, *Cuv. and Val., xvii, p. 308.

B. III. D. 13, A. 20, C. 19, L. l. 45.

Length of head $1/5$, of body $3/11$ of the total length.—*Eyes*: diameter $2/5$ of length of head. Snout obtuse, upper jaw the longer.—*Fins*: dorsal and anal pointed; caudal slightly forked.—*Lateral line* curves downwards in the pectoral region.—*Colours* silvery.

Hab.—Bengal, size of recorded specimen 3 inches and 9 lines.

7. DANIO NEILGHERRIENSIS.

Paradanio Nilgherriensis, Day, Proc. Zool. Soc. 1867, p. 296.

Danio Nilgherriensis, Günther, Catal. vii, p. 283.

Cowie, Tamil.

B. III. D. $\frac{3}{9-10}$, P. 15, V. 9, A. $\frac{2}{11-12}$, C. 19, L. l. 35, L. tr. $\frac{6-7}{4}$,

Vert. $\frac{12}{20}$.

Length of head $2/9$, of caudal $2/9$, height of body $1/4$, of dorsal fin $1/8$ of the total length.—*Eyes*: diameter $1/3$ of length of head, $2/3$ of a

diameter from end of snout, $1\frac{1}{2}$ diameters apart. Abdominal profile more convex than the dorsal one. Lower jaw anterior, with a slight knob at its extremity; a pair of short rostral barbels, and sometimes rudimentary maxillary ones.—*Teeth* : pharyngeal, crooked, pointed, 5, 4, 2, 2, 1, 5.—*Fins* : dorsal commences midway between the end of the snout and the middle of the caudal fin, it extends to above the fourth or fifth anal ray. Caudal emarginate in its last fourth.—*Lateral line* : curves downwards in the pectoral region.—*Colours* : back greenish, sides silvery, with a purplish tinge along the abdomen; a badly marked broad, steel-blue stripe, extending from behind the eye to the caudal fin and bounded above and below by a narrow yellow edging.

Hab.—Rivers on Neilgherry Hills; attaining $3\frac{1}{2}$ inches in length.

8. DANIO OSTEOGRAPHUS.

Perilampus osteographus, McClelland, Ind. Cyp., pp. 289, 392, pl. 45, fig. 3, (erroneously numbered, pl. 56, fig. 9,) *Cuv. and Val. xvi, p. 468.

? *Chela alburna*, Heckel, Fische Kaschmir, p. 390, c. fig.

Perilampus Malabaricus, Jerdon, M. J. L. & S. 1849, p. 325, (Male).

„ *Canarensis*, Jerdon, l. c. p. 325, (Female).

? „ *Mysoricus*, Jerdon, l. c. p. 325.

? *Danio alburnus*, *Günther, Catal. vii, p. 283.

„ *miconema*, Bleeker, Mem. Soc. Holl. Haarlem, 1864, Ceylon, p. 19, t. 4, fig. 2; Günther, Catal. vii, p. 282; Day, Proc. Zool. Soc. 1869, p. 560; 1870, p. 374.

„ *lineolatus*, Bleeker, l. c. p. 19, fig. 3.

Devanio cyanotonia, *Bleeker, Prod. Cyp. p. 283.

Paradanio aurolineatus, Day, Proc. Zool. Soc. 1867, p. 296.

B. III. D. $\frac{2}{11}$, P. 15, V. 8, A. $\frac{3-4}{13}$, C. 19, L. l. 35—37, L. tr. $7\frac{1}{3}$.

Length of head $\frac{2}{11}$, of caudal $\frac{2}{11}$, height of body $\frac{2}{7}$, of dorsal fin $\frac{1}{8}$ of the total length.—*Eyes* : diameter $\frac{1}{5}$ of length of head, 1 diameter from end of snout. Rostral barbels half as long as the orbit, maxillary ones very short. In some specimens the latter are entirely absent.—*Colours* : back steel-blue; some irregular vertical yellow lines on the fore-part of the body, and three or four blue bands along the sides, the central ones coalescing, so as to form a broad bluish band down to the middle of the caudal fin.

Hab.—India and Ceylon; attaining 6 inches in length.

* 9. DANIO ÆQUIPINNATUS.

Perilampus æquipinnatus, McClelland, Ind. Cyp. p. 393, pl. 60, f. 1.

Pteropsarion æquipinnatus, *Günther, Catal. vii, p. 285.

B. III. D. $\frac{2}{10}$, P. 17, V. 8, A. $\frac{2}{12-14}$, C. 19, L. l. 32—34, L. tr. $\frac{7}{3\frac{1}{2}}$.

Length of head $\frac{1}{5}$, of caudal nearly $\frac{1}{5}$, height of body $\frac{1}{4}$ of the total length.—*Eyes* : diameter $\frac{2}{7}$ of length of head, 1 diameter from end of snout. Rostral barbels extend to the middle of the orbit, the maxillary ones

minute. Cleft of mouth oblique and extending to under the anterior margin of the orbit, a bluntish knob at the symphysis. Tongue thick and transversely corrugated. In large specimens, the posterior $\frac{2}{3}$ of the inferior surface of the lower jaw is dilated, so that they nearly meet at the anterior extremity of the enlarged portion; a row of well-developed glands along the margin of the mandible.—*Fins*: the dorsal arises midway between the centre of the orbit and the base of the tail, extending to over the anterior anal rays, it is $\frac{2}{3}$ as high as the body. Pectoral as long as head without the snout, reaching the ventral which last does not extend as far as the anal. Caudal forked.—*Colours*: several horizontal blue bars, the largest along the middle line of the body and continued on to the tail.

Hab.—Base of Garo Hills.

B. A PORTION OR THE WHOLE OF THE ABDOMINAL EDGE TRENCHANT.

a. *Dorsal fin opposite the anal, which latter is elongated* (9 to 21 branched rays.)

Genus PERILAMPUS, *McClelland.*

Paradanio, sp. Day.

Cachius et *Eustira*, Günther.

Pseudobranchiæ present. Body oblong, compressed, with a cutting abdominal edge. Mouth obliquely directed upwards. Barbels absent. Pharyngeal teeth in three rows 5, 4 or 3, 2 or 1/1 or 2, 3 or 4, 5 uncinatæ. Dorsal fin rather short, without any osseous ray, and commencing opposite or behind the origin of the anal, which last has many rays. Scales of moderate size. Lateral line concave, passing to the lower half of the base of the caudal fin.

Geographical distribution. Fresh waters of India, Ceylon, and Burma.

SYNOPSIS OF SPECIES.

1. *Perilampus atpar*, D. 2/7, A. $\frac{3}{19-21}$, L. l. 55. India generally, and Burma.
2. „ *laubuca*, D. 2/9, A. $\frac{2}{17-20}$, L. l. 34, Orissa, Bengal, and Burma.
3. „ *Ceylonensis*, D. 2/10, A. $\frac{2}{15}$, L. l. 35. Ceylon.

I. PERILAMPUS ATPAR.

Cyprinus cachius, Ham. Buch., Fish. Ganges. pp. 258, 384 (young); *Cuv. and Val., xvi, p. 453.

Cyprinus atpar, Ham. Buch., l. c. pp. 259, 384. (adult); *Cuv. and Val. xvi, p. 454.

Perilampus cachius, McClell., Ind. Cyp. pp. 289, 396, pl. 46, f. 6.

„ *psilopteromus*, McClell., l. c. f. 4, (from H. B. MSS.)

„ *macropodus*, Jerdon, M. J. L. and S., 1849, p. 325.

Paradanio elegans, Day, Proc. Zool. Soc. 1867, p. 297.

Cachius atpar, Günther, Catal. vii, p. 339.

Bonkuaso, Uriah; *Nga-man-dan*, and *Ya-paw-nga* and *Nga-phyin-gyan*, Burmese; *Kachhi*, Beng.

B. III. D. 2/7, P. 10, V. 5-6, A. $\frac{3}{19-21}$, L. l. 55, L. tr. 11/4.

Length of head 1/6, of caudal 1/5, height of body 1/4 of the total length.—*Eyes*: diameter 1/4 of length of head, 3/4 of a diameter from end of snout, $1\frac{1}{2}$ diameters apart. Body strongly compressed, the abdominal edge being cutting. Cleft of mouth deep, oblique, extending nearly to beneath the anterior margin of orbit. Lower jaw the longer.—*Teeth*: pharyngeal, 5, 4, 1/1, 4, 5, crooked, pointed.—*Fins*: dorsal commences opposite the beginning of the second third of the anal. Pectoral elongate. Ventral with an elongated ray extending to the middle of the anal. Caudal forked, lower lobe the longer.—*Lateral line*: concave.—*Colours*: greenish with a silvery lateral band.

Hab.—Throughout India and Burma; attaining 4 inches in length.

2. PERILAMPUS LAUBUCA.

Cyprinus laubuca, Ham. Buch., Fish. Ganges, pp. 260, 384; *Cuv. and Val, xvi, p. 456.

? „ *dancena*, Ham. Buch., l. cit. pp. 342, 393.

Perilampus guttatus, McClell., Ind. Cyp., pp. 289, 394, pl. 45, f. 4 (erroneously marked pl. lvi, f. 10, from H. B.'s MSS.)

? „ *perseus*, McClell., l. c. pp. 289, 395, pl. 46, f. 5; *Cuv. and Val. xvi, p. 469.

Leuciscus laubuca, Bleeker, Verh. Bat. Gen. xxv, Beng. and Hind. p. 138.

Chela laubuca, Günther, Catal. vii, p. 335.

Perilampus laubuca, Day, Proc. Zool. Soc. 1869, pp. 380, 614.

„ *fulvenscens*, Blyth, J. A. S. of B. 1860, p. 163; Day, Proc. Zool. Soc. 1869, p. 559.

Bankoe, Uriah; *Nga-me-loung*, Burmese; *Layubuka* and *Dankena*, Beng.; *Dannahrah*, Hind.

B. III. D. 2/9, P. 13, V. 7, A. $\frac{2}{17-20}$, C. 19, L. l. 34, L. tr. 7/5.

Length of head 1/6, of caudal 1/5, height of dorsal 1/8, of pectoral 1/3, of body 1/4 of the total length.—*Eyes*: high up, diameter 1/3 of length of head, nearly 1 diameter from end of snout, $1\frac{1}{2}$ diameters apart. Body strongly compressed with the abdominal edge cutting from the pectoral to the anal fin.—*Teeth*: pharyngeal, 5, 4, 1/1, 4, 5.—*Fins*: dorsal arises slightly posterior to the origin of the anal. Caudal deeply forked. Pectoral reaching anal.—*Lateral line*: curved downwards, $3\frac{1}{2}$ rows of scales between it and the base of the ventral fin.—*Colours*: silvery with some golden vertical stripes during life. Fine dots over the body, and a black mark, shot with green, above the base of the pectoral fin, and another at the base of the caudal, in which the last third of the lobes is, in Burmese specimens, tipped with black.

Hab.—Orissa, Bengal and Burma; attaining 3 inches in length.

3. PERILAMPUS CEYLONENSIS.

Eustira Ceylonensis, Günther, Catal. vii, p. 331.

B. III. D. 2/10, P. 17, V. 7, A. $\frac{2}{15}$, C. 19, L. 1. 35, L. tr. $7\frac{1}{2}$.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{4}$, height of body $\frac{1}{4}$ of the total length.—*Eyes*: diameter $\frac{1}{3}$ of length of head, $\frac{3}{4}$ of a diameter from end of snout. Posterior extremity of maxilla extends to below the anterior margin of the orbit; lower jaw the longer.—*Fins*: origin of dorsal opposite commencement of anal. Pectoral reaching the ventral.—*Colours*: uniform silvery.

Hab.—Ceylon. The specimens in the British Museum are nearly 2 inches in length.

Genus. CHELA, Ham. Buch. (Pl. I.)

Oxygaster, v. Hass.

Leuciscus, sp. Cuv. and Val.

Laubnea, *Macrochirichthys*, et *Paralaubnea*, Bleeker.

Body rather elongate and compressed; abdominal edge cutting. *Pseudobranchiæ* present. Mouth directed somewhat upwards, with the lower jaw prominent, and generally with a knob above the symphysis. *Barbels* absent. *Pharyngeal teeth* hooked and slender, in two or three rows. *Dorsal fin* short, without any osseous ray, situated principally or entirely opposite the anal which latter has an elongated base; *pectorals* long; *caudal* forked. *Scales* of moderate or small size. *Lateral line* concave.

Dr. Günther suggests the following sub-genera.

a. The trenchant thoracic edge anterior to the pectoral supported by the dilated bones of the forearm. OXYGASTER.

a. Pharyngeal teeth in three rows. *Oxygaster*.

β. " " two " *Macrochirichthys*.

b. The thoracic edge not supported by the dilated bones of the forearm. SECURICULA.

Geographical distribution: India, Burma and extending almost throughout Asia. Generally termed *Vellache-candee* in Tamil; *Bay-ree-saie*, and *Baarsee*, Tel.; *Bounce-putti*, Uriah; *Took*, Panjāb.

SYNOPSIS OF SPECIES.

1. *Chela Stadoni*, D. 2/8, A. 2/19, L. 1. 68, L. tr. 10/8. *Burma*.
2. " *argentea*, D. $\frac{2-3}{7}$, A. $\frac{3}{14-15}$, L. 1. 43—45, L. tr. $\frac{6\frac{1}{2}}{3}$. *Southern India*.
3. " *bacaila*, D. 2/7, A. $\frac{2}{12-13}$, L. 1. 110. *Bengal, &c.*
- *4. " *novacula*, D. 9, A. 17, L. 60, L. tr. 15/3. *India*.
5. " *flavipinnis*, D. 2/7, A. $\frac{3}{14-16}$, L. 1. 65, L. tr. 9/5. *Southern India*.
6. " *untrahi*, D. 2/7, A. 3/17, L. 1. 52, L. tr. 7/5. *Orissa*.

7. „ *phulo*, D. 2/7, A. 3/17, L. 1. 87, L. tr. 12/6. Bengal, Orissa, &c.
 8. „ *Sardinella*, D. 2/7, A. 2/19, L. 1. 48, L. tr. $\frac{7\frac{1}{2}}{4}$. Burma.
 *9. „ *Panjâbensis*, D. $\frac{2}{7}$, A. $\frac{3}{14}$, L. 1. ca. 110, L. tr. 12/9. Panjâb.
 10. „ *alkootee*, D. 10, A. 10. Dekhan.
 *11. „ *jorah*, D. 10, A. 11. Dekhan.
 12. „ *teekanee*, D. 10, A. 14. Dekhan.
 13. „ *gora*, D. 3/7, A. 2/13, L. 1. 140—160. Bengal, Orissa, &c.
 14. „ *chupeoides*, D. $\frac{2}{7-8}$, A. $\frac{2}{12-13}$, L. 1. 80, L. tr. $\frac{13\frac{1}{2}}{6\frac{1}{2}}$. Southern India.

1. CHELA SLADONI.

Day, Proc. Zool. Soc. 1869, p. 622.

B. III. D. 2/8, P. 11, V. 8, A. 2/19, C. 21, L. 1. 68, L. tr. 10/8.

Length of head $1\frac{1}{6}$, of caudal $1\frac{1}{5}$, height of body $1\frac{1}{4}$ of the total length.—*Eyes*: diameter $2\frac{2}{7}$ of length of head, $3\frac{1}{4}$ of a diameter from end of snout. Edge of thorax rounded; the serrated abdominal margin commences opposite the base of the pectoral fin. Posterior extremity of the maxilla reaches to beneath the anterior third of the orbit. Suborbital ring of bones is half as deep as the diameter of the orbit.—*Teeth*: pharyngeal, crooked 5, 4, $2\frac{1}{2}$, 4, 5.—*Fins*: dorsal commences opposite the anal; lower caudal lobe the longer.—*Colours*: silvery, caudal black edged.

Hab. Irrawaddi in Burma, extending northwards as far as Mandalay.

2. CHELA ARGENTEA.

Day, Proc. Zool. Soc. 1867, p. 301; Günther, Catal. vii, p. 334.

? *Pelecus diffusus*, Jerdon, M. J. L. and S. 1849, p. 327.

? *Chela diffusa*, *Günther, Catal. vii, p. 334.

Wellachee-candee, Tam. “The white carp.”

B. III. D. $\frac{2}{7}$, P. 15, V. 8, A. $\frac{3}{14-15}$, C. 19, L. 1. 43—45, L. tr. $6\frac{1}{2}/3$.

Length of head nearly $1\frac{1}{5}$, of pectoral rather above $1\frac{1}{5}$, of caudal a little more than $1\frac{1}{5}$, height of body above $1\frac{1}{5}$, of dorsal fin nearly $1\frac{1}{9}$ of the total length.—*Eyes*: diameter not quite $1\frac{1}{3}$ of length of head, nearly 1 diameter apart and from end of snout. Cleft of mouth extending to below the anterior third of the orbit, a knob at the end of the lower jaw. Suborbital ring of bones broad and covering the cheek, the third being as wide as the preorbital. The median edge in front of the pectoral fins is not supported by the dilated bones of the fore-arm. Thorax without a sharp edge.—*Fins*: dorsal situated in the posterior third of the distance between the snout and the base of the caudal fin, extending to over the commencement of the anal. Dorsal and anal highest anteriorly. Caudal deeply lobed.—*Lateral line*: descends gently in the first twelve scales, finally attaining the centre of the

caudal.—*Teeth* : pharyngeal, curved, pointed, 5, 3, 2½, 3, 5. *Colours*, silvery with a lateral band which fades after death.

Hab.—Bowany river at the base of the Neilgherries, attaining 6 inches in length.

Dr. Jerdon gives about 50 scales in *C. diffusa*, along the side, and observes that his species is found in the Cauvery and all its tributaries. I did not obtain it in the lower portions of the Cauvery, but *C. argentea* was likewise absent, and I suspect the two are identical.

3. CHELA BACAILA.

Cyprinus bacaila, Ham. Buch., Fish. Ganges, pp. 265, 384, pl. 8, fig. 76; *Cuv. and Val. xvi, p. 460.

Opsarius bacaila, McClell., Ind. Cyp. pp. 295, 414.

„ *leucurus*, McClell., loc. cit. pp. 295, 415, pl. 47, fig. 3; *Cuv. and Val., xvi, p. 470.

Leuciscus bacaila, Bleeker, Verh. Bat. Gen. xxv, Beng. and Hind. p. 137.

„ *cultellus*, Cuv. and Val., xvii, p. 341, pl. 507.

Felecus cultellus, Jerdon, M. J. L. and S. 1849, p. 326.

Chela bacaila, Günther, Catal. vii, p. 332; Day, Proc. Zool. Soc. 1869, p. 382.

Jellahri, Uriah. *Chelliah*, Hind.

B. III. D. 2/7, P. 13, V. 9, A. $\frac{2}{12-13}$, C. 19, L. 1. 110.

Length of head 1/6, of caudal 2/9, height of body 2/11 of the total length. *Eyes* : snout slightly longer than the eye. Bones of the fore-arm not dilated, and not supporting the abdominal edge anterior to the pectoral fin. Suborbital ring of bones broad, nearly covering the cheek.—*Teeth* : pharyngeal 5, 4 or 3, 2 2, 3 or 4, 5.—*Fins* : first anal ray is below the middle of the dorsal fin.—*Scales* : extend forwards on the head to nearly opposite the posterior margin of the orbit.—*Colours* : uniform silvery.

Hab.—Throughout India except Malabar. It may exist according to Dr. Günther in Moulmein, but I could not find it there. It attains six inches in length.

4. *CHELA NOVACULA.

Leuciscus novaculi, Val. in Jacq. Voy. Ind., pl. 15, fig. 2; Cuv. and Val. xvi, p. 345.

Chela novacula, *Günther, Catal. vii, p. 334.

B. III. D. 9, A. 17, L. 1. 60, L. tr. 15/3.

Length of head 1/5, height of body 1/5 of the total length.—*Eyes* : large.—*Teeth* : pharyngeal—5, 4, 3, 3, 4, 5.—*Fins* : dorsal above the anterior anal rays; the pectorals nearly reach the ventrals.—*Colours* : silvery.

Hab.—India.

5. CHELA FLAVIPINNIS.

? *Leuciscus scapellus*, Cuv. and Val. xvii, p. 347.

Pelecus flavipinnis, Jerdon, M. J. L. and S. 1849, p. 327.

Chela flavipinnis, Day, Proc. Zool. Soc. 1869, p. 382.

B. III. D. 2/7, P. 13, V. 9, A. $\frac{3}{14-16}$, C. 19, L. 1. 65, L. tr. 9/5.

Length of head 1/6, of pectoral 2/9, of caudal 2/11, height of body 1/5, of dorsal fin 1/12 of the total length.—*Eyes*: diameter 1/3 of length of head, 3/4 of a diameter from end of snout, 2/3 of a diameter apart. Cleft of mouth oblique, knob on symphysis well developed. Suborbital ring of bones half the width of the diameter of the orbit, and nearly covering the cheek; five small crenulations along the lower preopercular margin.—*Teeth*: pharyngeal, 5, 4, 2/2, 4, 5.—*Fins*: dorsal situated over the anterior anal rays; caudal lobed, the lower lobe the longer.—*Gill rakers*: short. The bones of the fore-arm do not support the thoracic edge.—*Lateral line*: continuous, eventually attaining the centre of the caudal fin.—*Colours*: silvery; fins tipped with orange.

Hab.—Cauvery and Coleroon rivers in Madras Presidency.

6. CHELA UNTRAHI.

Day, Proc. Zool. Soc. 1869, p. 381.

Untrahi, Uriah.

B. III. D. 2/7, P. 13, V. 7, A. 3/17, C. 17, L. 1. 52, L. tr. 7/5.

Length of head 1/6, of pectoral 1/5, of caudal 1/5, height of body 1/5, of dorsal 1/9 of the total length.—*Eyes*: upper margin near the profile, diameter 1/3 of length of head, 2/3 of a diameter from end of snout, nearly 1 diameter apart. Dorsal profile nearly horizontal; abdominal profile with a cutting edge from opposite the base of the pectoral fin. Mouth very oblique, knob on symphysis minute. Lower jaw in advance of the upper, the maxilla extending to below the anterior margin of the orbit. Suborbital ring of bones moderately wide.—*Fins*: pectorals reaching ventrals, and a dilated humeral supports a smooth thoracic edge. Dorsal arises midway between the posterior margin of the orbit and the posterior extremity of the caudal fin, and situated over the anterior anal rays. Caudal lobed, the lower lobe the longer.—*Scales*: deciduous, extending forwards on the nape to opposite the posterior margin of the orbit.—*Lateral line*: curves downwards, 1 row of scales between it and base of ventral fin; it ceases a few scales anterior to the caudal fin.—*Colours*, silvery.

Hab.—Mahánadi river; attaining five inches in length.

7. CHELA PHULO.

Cyprinus phulo, Ham. Buch., Fish. Ganges, pp. 262, 384; *Cuv. and Val. xvi, p. 457.*

Opsarius albulus, McClell., Ind. Cyp., pp. 296, 416, pl. 48, fig. 10.

Chela Owenii, Sykes, Trans. Zool. Soc. 1841, p. 361, pl. 63, fig. 1.

Pelecus Owenii, *Jerdon, M. J. L. and S. 1849, p. 328.

Chela phulo, *Günther, Catal. vii, p. 334; Day, Proc. Zool. Soc. 1869, p. 381.

Phul chela, Beng. *Dunnahree*, Hind. *Took*, Panj.

B. III. D. 2/7, P. 13, V. 9, A. $\frac{3}{17}$, C. 19, L. 1. 87, L. tr. 12/6.

Length of head 2/11, of pectoral 1/5, of caudal above 1/5, height of body 1/5 of the total length. — *Eyes*: diameter 2/5 of length of head, 1/2 a diameter from end of snout, 1 diameter apart. Abdominal profile cutting posteriorly to the base of the pectoral fin. Third suborbital bone two-thirds as deep as the uncovered portion of the cheek below it. The maxilla extends to under the hinder margin of the orbit. — *Fins*: dorsal commences midway between the posterior extremity of the orbit and the posterior extremity of the caudal fin, and slightly behind the origin of the anal. Caudal deeply forked, lower lobe the longer. — *Lateral line*: curves gently downwards. *Colours*: silvery, with a bright silvery lateral band.

Hab.—Bengal, Orissa and Central India as far southwards as the Tamboodra and Kistna rivers; attaining 4 inches in length.

8. CHELA SARDINELLA.

Leuciscus sardinella, Cuv. and Val., xvii, p. 344.

Chela sardinella, *Günther, Catal. vii, p. 338.

B. III. D. 2/7, P. 13, V. 8, A. $\frac{2}{19}$, L. 1. 48, L. tr. $7\frac{1}{4}$.

Length of head 1/6, of pectoral 1/6, of caudal above 1/6, height of body 2/9 of the total length. — *Eyes*: diameter 2/7 of length of head; 1 diameter from end of snout; nearly 1 diameter apart. The bones of the forearm are not dilated and do not support the thoracic edge which is smooth, the keeled portion commencing opposite the pectoral fin. Suborbital ring of bones broad. — *Teeth*: pharyngeal, 5, 4, 3, 3, 4, 5. — *Fins*: dorsal commences above the anterior anal rays. — *Colours*, silvery.

Hab.—Irawati river at Rangoon; to 6 inches in length.

9. CHELA PANJÁBENSIS.

Took, Panj.

B. III. D. 2/7, P. 11, V. 6, A. $\frac{3}{14}$, C. 19, L. 1. ca. 110, L. tr. 12/9.

Length of head 1/6, of caudal 1/6, height of body 2/9 of the total length. — *Eyes*: diameter 2/5 of length of head; 1/2 a diameter from end of snout. The posterior extremity of the maxilla extends to nearly beneath the anterior margin of the orbit. Lower jaw the longer. The suborbital ring of bones is broad, and the third three times as deep as the uncovered portion of the cheek below it. Dorsal profile nearly horizontal; abdominal edge cutting

from opposite the base of the pectoral fin.—*Fins* : dorsal arises midway between the posterior margin of the opercle, and the posterior extremity of the lobes of the caudal. Pectoral longer than the head, but does not quite reach the base of the ventral, which last fin only extends half the distance to the anal. Lower lobe of caudal the longer.—*Scales* : moderately deciduous, they extend forwards to opposite the suborbital ring of bones ; there is a slight elevation along the centre of each ; $5\frac{1}{2}$ rows between the lateral line and the base of the ventral fin.—*Colours* : silvery with a burnished silvery band along the side.

Hab.—Labore, in the Ravi river. In appearance it is very similar to the *C. phulo*, H. B.

10. *CHELA ALKOOTEE.

Sykes, Trans. Zool. Soc. 1841, p. 362.

B. III. D. 10, P. 10, V. 7, A. 10.

"Sides slightly compressed ; the back and belly rounded ; back straight."—*Fins* : "lobes of the tail sharp, lowest the longest."—*Scales* : "excessively minute."—*Lateral line* : "quite straight."—*Colours* : "the gill covers quite smooth, and of a polished silver ; pupils black ; a black circle surrounds the eyes, and there is a patch of faint yellow on the forehead ; all the rest of the fish is of a silver white colour, and the body is semi-diaphanous."

Hab.—Dekhan ; attaining 1 inch in length.

11. *CHELA JORAH.

Sykes, Trans. Zool. Soc. ii, p. 361.

B. III. D. 10, P. 12, V. 8, A. 11, C. 18.

"A somewhat compressed fish ; straightish back, convex belly."—*Colours* : "back dark, with a purplish shade, softening into silver down the sides and abdomen."

Hab.—"Found abundantly in the Beema river, near Pairgaon."

12. *CHELA TEEKANEE.

Sykes, Trans. Zool. Soc. ii, 1841, p. 362.

B. III. D. 10, P. 12, V. 9, A. 14, C. 8.

"A compressed fish ; back very slightly arched ; snout nearly in a continuation of the same line ; body deep ; belly convex."—*Fins* : "dorsal situated far back."—*Colours* : "on the back light reddish brown, softening into silver."

Hab.—Beema river at Pairgaon ; attaining $2\frac{1}{2}$ inches in length.

13. CHELA GORA, Pl. I, Fig. 4.

Cyprinus gora, Ham. Buch., Fish. Gauges, pp. 263, 384; *Cuv. and Val, xvi, p. 458.

Opsarius pholicephalus, McClell., Ind. Cyp. pp. 295, 415, pl. 47, fig. 2.

Chela gora, Günther, Catal. vii. p. 332; Day, Proc. Zool. Soc. 1869, p. 381.

Hum-catchari, Uriah. *Ghora chela*, Beng. *Chel-hul*, Hind. *Boun-chi* and *Kundul*, Panj.

B. III. D. 3-7, P. 15, V. 9, A. $\frac{2}{13}$, C. 19, L. 1. 140—160, Vert. 16.

Length of head $1\frac{1}{5}$, of caudal $1\frac{1}{6}$, height of body $1\frac{1}{5}$ of the total length.—*Eyes*: diameter $1\frac{1}{5}$ of length of head, $1\frac{1}{2}$ diameters from end of snout, $1\frac{1}{4}$ diameters apart. The bones of the fore-arm do not support the abdominal edge, the keeled portion of the abdominal profile commences posterior to the ventral fin. Suborbital ring of bones broader than the diameter of the eye, but only covering two-thirds of the cheek.—*Teeth*: pharyngeal, 5, 3, $1\frac{1}{2}$, 3, 5.—*Gill rakers*: very short, curved, 8 in the lower branch of the outer bronchial arch. *Fins*: dorsal commences slightly in advance of the anal.—*Scales*: extend forwards on the head to above the nostrils.—*Colours*: silvery.

Hab.—Bengal, Orissa and Asam; attaining 8 inches in length.

14. CHELA CLUPEOIDES.

Cyprinus clupeoides, Bloch, xii, p. 49, t. 408, fig. 2.

Clupea cyprinaoides, Schn. in Bloch. Syst. Ich. p. 427.

Chela balooke, Sykes, Trans. Zool. Soc. ii, p. 360.

Leuciscus clupeoides, Cuv. and Val. xvii, p. 342.

” *Dussumieri*, Cuv. and Val. xvii, pl. 508.

” *acinaces*, Cuv. and Val. xvii, p. 347, pl. 509.

Pelecus affinis, Jerdon, M. J. L. and S. 1849, p. 327.

Chela clupeoides, *Günther, Catal. vii, p. 333.

Netteli, Tam.

B. III. D. $\frac{2}{7-8}$, P. 13, V. 9, A. $\frac{2}{12-13}$, C. 19, L. 1. 80, L. tr. $\frac{13\frac{1}{2}}{6\frac{1}{2}}$.

Length of head from 2/9 to $1\frac{1}{5}$, of pectoral $1\frac{1}{5}$, of caudal $2\frac{1}{11}$, height of body $2\frac{1}{11}$, of dorsal fin $1\frac{1}{10}$ of the total length.—*Eyes*: diameter $1\frac{1}{3}$ of length of head, 1 diameter from end of snout, $3\frac{1}{4}$ of a diameter apart. Rather a strong knob on symphysis; opercle as broad as high. Abdominal edge trenchant.—*Teeth*: pharyngeal, 5, 4, 2, 2, 4, 5.—*Fins*: dorsal situated in the posterior $2\frac{1}{5}$ of the body, and very slightly in advance of the anal. Caudal lobed, the lower lobe the longer. *Scales*: deciduous and placed in sinuous rows.—*Lateral line*: at its termination passes upwards to the upper portion of the inferior lobe of the caudal fin.—*Colours*: silvery.

Hab.—Madras Presidency, Mysore and the Dekhan; attaining 6 inches in length, and very good eating.

II. *Sub-Fam.* HOMALOPTERINA.*Apalopterinae*, McClell.

Pseudobranchiæ absent. Body elongated and depressed anteriorly, having a broad smooth abdomen. Snout prominent before the mouth, which latter is small, transverse, inferior and central, with fleshy lips. Barbels present. Branchial aperture vertical and narrow. Pharyngeal teeth in a single row, conical. Pectoral and ventral fins horizontal, forming half discs. Body scaled. Air bladder absent.

Geographical distribution.—Streams and mountain torrents in the Hills of India, and extending as far as Java and Sumatra.

ONLY ONE KNOWN GENUS.

Homaloptera, 6 barbels, none on mandibles.

12. *Genus.* HOMALOPTERA, *v.* Hass.*Balitora*, Gray.*Platyicara*, McClelland.

Head and anterior part of body depressed; snout more or less spatulate. Mouth small, inferior, with two pairs of rostral barbels, and one at either angle of the mouth. Pharyngeal teeth small, from 5 to 16 in one row. Pectoral and ventral fins with many rays, the outer of which are simple. Dorsal short, situated opposite to the ventrals; anal likewise short.

Geographical distribution.—Java and Sumatra, and through some of the hilly districts of the Himalayas to the Wynaad in Madras Presidency.

SYNOPSIS OF SPECIES.

1. *Homaloptera Brucei*, D. 3/8, A. 2/5, L. 1. 70. Brown blotched with darker. Wynaad hills in Madras.
2. „ *maculata*, D. 11, A. 2/5, L. 1. 78. Butan and Khasi Hills.
3. „ *bilineata*, D. 9, A. 6. Horizontal bands. Tenasserim Provinces.

1. HOMALOPTERA BRUCEI.

Balitora Brucei, Gray and Hard., Ind. Zool.; *McClelland, Ind. Cyp., p. 299, 428, pl. 49, fig. 1. (From Gray and Hard.); *Cuv. and Val. xviii, p. 101.

Platyicara australis, Jerdon, M. J. L. and S., 1849, p. 333.

Homaloptera Brucei, Day, Proc. Zool. Soc. 1867, p. 348; Günther, Catal. vii, p. 340.

Cal-candee, Tam. “Stone carp.”

B. III. D. 3/8. P. 19, V. 9, A. 2/5, C. 17, L. 1. 70.

Length of head 1/6, of caudal 1/6, height of body 1/7 of the total length.—*Eyes*: directed upwards and outwards, diameter 1/5 of length of head, 3 diameters from end of snout, 2 diameters apart. Snout broad, depressed; lips fringed. Rostral barbels short, their length equalling about

$\frac{2}{3}$ of the diameter of the orbit, the pair at the angle of the mouth thicker and slightly longer.—*Teeth*: pharyngeal, in one row, $\frac{5}{5}$.—*Fins*: dorsal highest in front, arising midway between the end of the snout and the base of the caudal. Pectoral nearly reaching the ventral. Caudal lobed in its posterior third.—*Scales*: cycloid.—*Lateral line*: complete.—*Colours*: dull olive, becoming yellowish beneath. Large brown blotches on the body. Dorsal fin with three rows of dull spots; pectoral and ventral with three or four, anal with two, caudal with three irregular bands, and black tips.

Hab.—Wynaad; 8 specimens taken up to $3\frac{1}{2}$ inches in length.

2. HOMALOPTERA MACULATA.

Balitora maculata, Gray and Hard., Ind. Zool.; *Cuv. and Val. xviii, p. 102.

Platyceara maculata, McClell., Ind. Cyp. pp. 299, 427, pl. 49, fig. 2. (From Gray and Hard.)

„ *anisura*, McClell., Cal. Journ. Nat. Hist. ii, p. 587, pl. 16, fig. 1.

Homaloptera maculata, Günther, Catal. vii, 340.

B. III. D. $\frac{3}{8}$, P. 21, V. 11, A. $\frac{2}{5}$, C. 17, L. 1. 70, L. tr. $\frac{10}{7}$.

Length of head $\frac{2}{13}$, of caudal $\frac{1}{5}$ of the total length.—*Eyes*: $2\frac{1}{2}$ diameters from end of snout, 1 diameter from end of opercle. Snout broad and depressed, with sharp margins; rostral and maxillary barbels small.—*Teeth*: pharyngeal, conical, in one row, $\frac{15}{15}$.—*Fins*: pectoral nearly reaches the ventral, its anterior nine rays are unbranched, as are also the first two of the ventral. Lower caudal lobe the longer.—*Scales*: absent from chest and as far as the posterior margin of the base of the ventrals.—*Colours*: dark brown with darker blotches; caudal banded.

Hab.—Himalayas from about Darjeeling through Bután, Asám and the Khasi Hills.

3.* HOMALOPTERA BILINEATA.

Blyth, J. A. S. of Bengal, 1860, p. 172.

B. III. D. 9, A. 6.

Said to be allied to *H. erythrorhina*, Cuv. and Val., xviii, pl. 524.

“A minute knob on the muzzle.”—*Colours*: “A narrow dark line from the muzzle to eye, continued behind the eye as a broad, irregular, somewhat zigzag band, set off laterally with whitish, and joining its opposite behind the dorsal fin. A corresponding but obscure band below the lateral line, little seen on the hind half of the body. Dorsal with a large blotch of black, and one small posterior spot. Caudal fin also black, with the sides of its base and the forking tips white (or yellow?), but the extreme tips black. Pectorals, ventrals, and anal, blotched with black; sides of body somewhat nigrescent.”

Hab.—Tenasserim provinces; the largest specimen obtained was $2\frac{1}{4}$ inches long.

(To be continued.)

ACCOUNT OF A VISIT TO THE EASTERN AND NORTHERN FRONTIERS OF
INDEPENDENT SIKKIM, WITH NOTES ON THE ZOOLOGY OF THE ALPINE
AND SUB-ALPINE REGIONS, PART II, ZOOLOGY,—by WILLIAM T.
BLANFORD, F. G. S., C. M. Z. S.

(Received 29th September, 1871.)

The present paper will contain notes on the Vertebrata collected, or observed, in the Alpine and Sub-alpine portions of Independent Sikkim, a few remarks being added on some of the animals inhabiting the neighbouring regions in Tibet. Only those species will be noticed which are found in the region of pine forests, or in the Rhododendron bushes and open ground above the limit of trees, and consequently no animals will as a rule be mentioned which are not found above 10,000 feet on the eastern Chola ranges, and above 8,000 feet in Northern Sikkim. This elevation, which is about the lower limit of pines, is also a fair approximation to a boundary line between the two faunas which meet in the Eastern Himalayas, the Malay and the Palearctic.

The fauna of the plains of India appears to penetrate deeply into the Western Himalayas and to meet the Palearctic fauna; but, as a rule, it stops suddenly at the base of the mountains in Sikkim. A few birds found in the outer valleys are species which inhabit the Indian Peninsula, but they form but a very small percentage of the avi-fauna; the great bulk of the animals of every class are either peculiar to the South-western Himalayas, or common to it and the Malay Peninsula. The most striking characteristic of the fauna of India proper is the presence of numerous forms with western and generally African affinities, such as *Hyæna*, *Canis*, *Mellivora*, *Lepus*, *Antelope*, *Gazella*, amongst mammals; *Neophron*, *Aquila*, (restricted,) *Thamnobia*, *Malacocircus*, *Pastor*, *Ammomanes*, *Pyrhalauda*, *Calandrella*, *Pterocles*, *Cursorius*, amongst birds; *Cabrita*, *Ophiops*, *Sitana*, *Eryx*, *Echis*, amongst reptiles; *Cycloptosis* amongst land mollusca, &c. All of these disappear in the Himalayas of Sikkim, and their place is taken by a far richer fauna. Amongst the mammals *Arctonyx*, *Helictis*, *Arctictis*, *Urva*, *Rhizomys* and *Nemorhadus*, almost all Malayan forms, make their appearance; amongst birds the sub-families *Eurylaiminae*, *Leiotrichinae*, *Macropyginae*, *Phasianinae*, entirely unrepresented in India, are found, whilst the number of *Picidae*,* *Cuculidae*, *Capitonidae*, *Nectarinidae*, *Crateropidae*,

* In the plains of India exclusive of Malabar there are 12 species of Woodpeckers enumerated as found by Jerdon. All except two or three being very local. In tropical and temperate Sikkim alone 17 are found. Of the *Timaliinae* of Jerdon 13 are found in various parts of India exclusive of Malabar, nine are peculiar to Malabar, and no less than 48 have been found in the South-eastern Himalayas.

Muscicapidæ, *Merulidæ* (especially *Ruticillinæ*), *Pycnonotidæ* and *Treronidæ* is greatly increased.

In the higher elevations of Sikkim, an entirely distinct fauna appears, which is almost purely Palearctic, although a few Malayan types are met with. *Arctomys*, *Lagomys*, *Moschus* and *Oris* appear amongst the mammals, whilst nearly all the species found at lower elevations disappear. Of the birds, scarcely any of the *Picariæ*, and only a single species of the *Timalinæ* are found at 12,000 feet; the *Pycnonotidæ* and *Treronidæ* are wanting, and the only families which gain in numbers are the *Cinclidæ*, *Fringillidæ*, and *Phasianidæ*. Amongst the genera which are deficient at the lower elevations, but common in the higher ranges, are *Gypaëtus*, *Troglodytes*, *Lophophanes*, *Accentor*, *Propasser*, *Nucifraga*, *Fregilus*, *Ithaginis* and *Lerva*.

The principal object of my visit to the higher ranges of Sikkim was to examine and collect this Palearctic fauna, and the principal result has been to ascertain that in these mountains two well marked sub-divisions of it are found: one inhabits the damper southern slopes of the hills, while the other is peculiar to the dry Tibetan climate. The latter we only entered in the upper Lachen valley, close to Kongra Lama, and to it belong the peculiar forms, *Otocoris Elwesi*, *Leucosticte hamatopygia*, *Montifringilla ruficollis*, *Fregilus pyrrhocorax*, *Cinclus sordidus* and *Accentor rubeentoides*.

A second object in my visit was to learn, so far as practicable, which of the migratory Passerine birds, found in the Indian plains in the winter, breed in the South-west Himalayas. My journey was undertaken rather too late in the year to render it at all probable that I should find any birds actually breeding, but still, as I was amongst the higher ranges at the migrating season, I had some opportunity of seeing which birds were previously there, and which appeared to arrive from the north. The result, so far as I was enabled to make observations, is rather surprising; for it appears probable that scarcely any of the Indian migratory birds breed in Sikkim, but, in some cases, species which visit India during the winter and cross the Himalayas to breed, are represented by allied forms which rarely or never leave the mountain ranges. Thus *Chelidon urbica*, which is a rare visitant to the plains of India,* is represented by *C. Nipalensis* and *C. Cushmaniensis*; *Erythrostera parva* and *E. leucura* by *E. maculata*, which is but rarely found in the plains, and by the various species of *Siphia*; *Pratincola Indica* by *P. ferrea*; *Ruticilla rufiventris* by *R. frontalis*, and others, *Calliope Kantschatkensis* by *C. pectoralis*; *Motacilla personata* and *M. Luzoniensis* by *M. Hodysoni*; *Carpodacus erythrinus* by species of *Propasser*.

* I have shot it in Chhatisgarh in the Central Provinces in April. Tickell, J. A. S. B. 1855, p. 277, records it from Chota Nāgpur and Moulmāin; Captain Irby from Oudh; Blyth, Ibis, 1867, p. 338.

Almost the only migrant which we found in Sikkim commonly, before the cold weather birds appeared from the north, was *Phylloscopus lugubris*, and in the sub-family to which this belongs *P. tristis*, *P. fuscatus*, *P. viridanus*, and, perhaps one or two species of *Reguloides* breed, so far as is known, in Central or Northern Asia, and visit India in the cold weather, whilst *Phylloscopus fuliginiventer*, *Reguloides crochroa* and several species of *Abroornis* are peculiar to the Himalayas.*

It should be remembered that the collections made by Captain Elwes and myself were procured under great disadvantages. For the greater portion of the time, on the Chola range especially, the weather was most unfavourable. Every field ornithologist knows how in wet and misty weather birds are silent and skulk amongst the bushes where it is most difficult to see them, whilst in bright sunshine they are constantly in the open. It is probable that any one visiting the highlands of Sikkim at a more favourable season, such as May, or October and November, would find very much to add to our observations.

I much regret having been unable, from want of time, to give any notes on invertebrata. My collections, however, were very small.

MAMMALIA.

QUADRU MANA.

PRESBYTIS SCHISTACEUS, Hodgk.

Jerdon, in the 'Mammals of India,' says that this monkey has not, to his knowledge, been obtained in Sikkim. Hooker mentions large monkeys near Lámteṅg† and again on his road from Láchúṅ‡ to the Tankra pass, in both cases in pine woods. I saw none myself, but several were shot by a shikari of Captain Elwes near Láchúṅ, thus rendering it nearly certain that it was this species which was noticed by Hooker, for no other large monkey is likely to be found at an elevation of 9,000 and 10,000 feet.

I greatly doubt if the Langúrs mentioned by Jerdon as occurring near Pankabari belonged to this species, because it is extremely improbable that an animal found at considerable elevations in the Western Himalaya, should also occur amongst the purely Malay forms of the Sikkim Terai. *P. schistaceus* has never to the best of my knowledge been found on the outer hills of Sikkim, the fauna of which is Malay, and it is perfectly natural to

* More Indian birds appear to breed in the Western Himalayas, but even here many cross the principal snowy range. I cannot agree with Lord Walden's opinion in this matter, (Ibis, 1867, p. 214 note), but much has been added to our knowledge of the summer haunts of the Indian *Passerines* during the last two or three years. Comp. Stoliczka, J. A. B. S., 1868. Tristram, Ibis, 1871, p. 109, &c., &c.

† Himalayan Journals Vol. II., p. 37.

‡ Ibid, Vol. II., p. 108, all references are to the first or octavo Edition, 1854.

find it in the pine forests of Northern Sikkim together with other forms of the Western Himalayas.

The following are the measurements of a fine adult female, taken on the body :—

	Feet Inches.	
Length of head and body measured in a straight line,	2	4
Ditto ditto, from nose to insertion of tail measured along the curve of the back,.....	2	6
Ditto of tail,	3	0
Ditto of fore leg,	1	7
Ditto of radius,	0	8½
Ditto of hand,	0	5¼
Ditto of hind leg,.....	1	8
Ditto of tibia,	0	8½
Ditto of foot from heel,	0	8
Girth of neck,	1	0
Ditto of chest behind shoulders,	2	0
Ditto of head,	1	3

CHEIROPTERA.

VESPERTILIO BLANFORDI, Dobson, Proc. As. Soc. Bengal, 1871. p. 214.

Two specimens of a bat which I obtained at Láchúng (8,000 ft.) are, Mr. Dobson informs me, identical with a species he had received from the North-west Himalayas, from both Simla and Dalhousie, and which he described under the above name.

A rather larger bat was noticed at the same place, but no specimens were obtained.

CARNIVORA.

URSUS TIBETANUS? F. Cuv. I presume this was the species common in the upper Tista valley. I did not see any, although their tracks on the hill sides with marks of scratchings for roots and insects abounded. I noticed no tracks above about 12,000 feet. Bears are said by the people to be very destructive to the grain crops. I could not learn whether *Ursus isabellinus* is found in Sikkim or not.

AMURUS FULGENS, F. Cuv., *A. ochraceus*, Hodgs. We heard of the occurrence of this animal in the pine woods around Láchúng, but neither of us saw it. Hooker was more fortunate (Him. Jour. Vol. II, p. 108). It is not common.

CANIS (*Vulpes*) MONTANUS. PERS., (v. *V. flavescens*, Hodgs.). Elwes picked up a perfectly fresh brush of a fox close to the Kangra Lama pass. It had a fine white tip. It is difficult to tell what animal could have killed the fox; for we saw no large birds of prey except Lammergrayers which I am disposed, with Mr. Hume and others, to consider carrion-feeders; and the only large carnivorous mammal likely to occur at this elevation is the ounce.

RODENTIA.

ARCTOMYS.

Marmot holes were abundant around Momay, but I never caught sight of one of the animals.

I was singularly unsuccessful in procuring specimens of small rodents ; on several occasions I saw a rat-like animal with a short head, probably *Neodon Sikkimensis*, but I could never capture a specimen.

? *ARVICOLA* sp. In the stream at Momay Sandong, on one occasion I saw a "water rat." This also may possibly have been *Neodon*, as that animal is said to be found at this elevation (15,000 feet), but it is not known to haunt streams. The animal I saw was swimming some distance beneath the surface, so much so that at the first glance I took it for a fish, but it soon came up and I could distinguish its form. It is scarcely necessary to say that my gun happened to be at an unusual distance, and not available. The water coming down from the Kinchinjha glacier is icy cold, and it would be surprising to find a forest denizen like *Neodon Sikkimensis* in a glacier stream traversing a treeless region. I think it most probable that the animal I saw was either *Arvicola amphibius*, which is known to occur in Siberia, or some allied form, perhaps undescribed. It was certainly a much larger animal than Hodgson's *Mus hydrophilus*, which appears, moreover, to be a tropical or sub-tropical form.

The absence of squirrels in the pine woods of Northern Sikkim is very remarkable.

? *LEPUS TIBETANUS*, Waterhouse, P. Z. S., 1841, p. 7, and Nat. Hist. Mam. Vol. II, p. 58.

L. ciastolus, Hodg. J. A. S. B., Vol. IX, p. 1186. Hooker, Him. Journal Vol. II, p. 158.

Hooker mentions the occurrence of slate-coloured hares with white rumps around Cholanú lake. I turned up two in one day in the Lachen valley near Kongra Láma pass, one of them about five miles on the Sikkim side of the frontier, so that if the Indian fauna is to be limited by the frontier of Tibet, this animal must be included in it. I doubt myself whether any of these Tibetan forms ought to be comprised in the Himalayan fauna; even *Ovis Nalura* is only a Tibetan form which strays into the higher ranges across the frontier.

Until more specimens can be procured and examined, it is impossible to say how far the various Central and Northern Asiatic races of hares, belonging to the type of the European *Lepus variabilis*, should be distinguished. There are - *L. variabilis*, Pall., identical with the European species found throughout Siberia ; *L. tolai*, Pall., peculiar to the high steppes of Mongolia

and Central Asia; *L. hybridus*, Pall.,* Altai mountains; *L. Tibetanus* Waterhouse, described from specimens from Little Tibet; *L. oiostolus*, Hodgs., from the snowy region of the Himalaya; and *L. pallipes*, Hodgs., from Central and Eastern Tibet. Although Hodgson's *L. oiostolus* is considered by Waterhouse as probably the same as his *Tibetanus*, and this view has been accepted by Gray, Blyth and Jerdon, it should be borne in mind that the opinion is founded on very imperfect materials, and that Waterhouse himself was by no means certain of the identification.

LAGOMYS ROYLEI, Ogilby. Jerdon, Mam. Ind. No. 210.

L. nipalensis, Hodgs.—*L. Hodgsonii*, Blyth.

L. Curzonæ, Hodgs., J. A. S. B., 1857, p. 207, nec Stoliczka, J. A. S. B., 1865, pt. II, p. 108.

? *L. badius*, Hooker, Himalayan Journals, Vol. II, p. 156,

Günchen, Bütia.

I feel some surprise at Hooker having overlooked the occurrence of this tail-less hare in Sikkim. That he did so is, I think, evident, because he especially refers (Vol. II, p. 156.) to the abundance of a *Lagomys* (which he calls *L. badius*) in the Tibetan portion of the Lachen valley, whilst at p. 132, he distinctly states that this animal, like the wild horse, fox and hare, does not cross the Donkia pass.

I first saw a *Lagomys* at about 12,000 feet on the Chola range near the Jelep-lá; it abounded in the pine forests below Chumanako at the foot of the Chola, and I found the same kind again common in the pine forests, about Yeomatang, at 12,000 to 13,000 feet, in the Lichung valley, and at similar elevation in the Lachen. I observed none above the limit of trees.

It is of course quite possible that the species seen by Hooker in the Tibetan part of the Lachen valley, at 16,000 to 17,000 feet, is a different species from that which inhabits the Sikkim pine forests. The name given by Hooker, *L. badius*, is probably one of Hodgson's numerous unpublished terms, and it is difficult to say, whether it was intended for the species subsequently named by him *L. Curzonæ* or not.

I shall first describe the Sikkim *Lagomys*, and then proceed to the difficult question of nomenclature.

The Sikkim *Lagomys* is a small species, the largest specimen obtained being barely seven inches long. The fur above is rufescent brown externally, more rufescent and paler on the head and shoulders, mixed with black towards the middle of the back and the rump, in consequence of the hairs having longer black tips on those parts. All the hairs are blackish leaden

* Gray in Ann. and Mag. N. H., Sept. 1867, p. 223, gives *L. altaicus*, Brandt, as distinct from *L. hybridus*, but without any reference to a description. *L. altaicus*, Eversman, is *L. hybridus*, teste Waterhouse and Gray.

grey near the skin and for the greater part, fully two-thirds of their length ; some have much thicker terminations of pale brown tipped with black on the back. The longest hairs on the back are about three-fourths of an inch in length. The sides are the same colour as the back, the breast is brown ; muzzle, chin and belly whitish or isabelline, the latter being browner in the middle than towards the sides, but more conspicuously so in some specimens than in others. Hair on the belly about one-third of an inch in length. The feet are pale isabelline above, pinkish brown beneath ; ears oval, thinly haired outside, except near the margin, where they are covered with very short close rich brown hair, the edge itself being whitish.

Mr. Hodgson, in his description of *Lagomys Curzoniæ*, says the fur is of two sorts, woolly and hairy. I believe the fur is the same in all species of *Lagomys*, and it is only so far of two sorts that some hairs have thickened tips.* Under the microscope all the hairs are the same towards the base, and appear to be cylindrical and colourless, with opaque granules at short and nearly regular intervals. A small portion only of the hairs are larger and have thickened tips which are not circular, but triangular, or quadrangular, apparently with three or four rounded longitudinal grooves. All the under fur is beautifully soft, but the terminations are harsher.

The following are the dimensions of two apparently adult specimens, taken from the bodies just after death. I unfortunately have not noted the sexes, but there is very little if any difference between them in measurements :—

	Inches.	Inches.
Length from nose to rump,	6·5	6·5
Nose to between ears,	1·5	0
Ear to nose,	0	1·5
Eye to nose,	0	0·7
Length of ear (measured behind the ear,)	0·7	0·8
Breadth of do.	0	0·6
Hind foot from heel with claws,	1·1	1·2
Tibia,	0	1·4
Fore foot and claws,	0·7	0·7
Radius,	0	1·0
Longest whiskers,	1·7	0

In a young specimen 4·5 in. long, the hind foot from the heel measured 0·9, the fore foot 0·5, the ear 0·5. The intestines in a specimen nearly 9 inches long measured 50 inches, and the cæcum 8 inches.†

* I find this is noticed by Ogilby in the description of *Lagomys Roylei*, Royle's *Illust. Bot., &c.*, p. lxix.

† This appears so much that I thought there must be a mistake in my note, but on measuring the intestines of a young specimen about 4 inches long in spirit, I find they are 38 inches long, and all membranes contract greatly in spirit.

I have extracted the skull of an adult in spirit, proved to be full grown by the teeth and by the epiphyses of the limb bones being firmly united to the shafts by ossification. This skull measured only 1·45" in length and 0·7 in breadth across the zygomatic arches; the orbits are very small, the longitudinal diameter being 0·35", and the transverse 0·28 inches only. The nasal bones are of equal breadth above throughout, and the anterior palatine openings broadly confluent behind. This skull agrees very well with the figure in Royle's illustrations of the Botany, &c. of the Himalayas,* except that it is smaller and that the orbits appear rather shorter; the general form is strikingly similar. The description of the skin of *L. Roylei* both by Ogilby and Waterhouse (*Rodentia*, p. 26.) agrees well with the Sikkim animal, except that the variety from the western Himalayas appears to be of somewhat larger size, but as all the dimensions appear to be taken from skins, they are of small value, and Jerdon's measurements, which are probably from fresh specimens, exceed mine by very little. The specimens in the Indian Museum also agree with those from Sikkim, except that the fur is much harsher, but it is difficult to say how far this is the result of preparation and of exposure. I am inclined to attach less value to it, because the different specimens in the Museum vary greatly in the softness of the fur.

But I am also persuaded that the Sikkim species must be Hodgson's *Lagomys Curzonie*. The description agrees very fairly, and the dimensions† only slightly exceed those of my specimens, whilst they agree with Jerdon's dimensions of *L. Roylei*. It is true that Hodgson does not mention the black tips to the hairs, but as he uses the somewhat indefinite expression "murine fulvous" for the colour, I can only suppose that there were probably dark tips. Hodgson's specimens were said to come from the Chumbi valley. Now I found *Lagomys Roylei* along the west slope of the range separating Sikkim from Chumbi, in climates as different, and places as far apart as Chola and the upper Láchung valley, and it is very surprising, if a different species inhabits the other side of the range.

My friend Dr. Stoliczka has described a very distinct species‡ from Ladak as *Lagomys Curzonie*, J. A. S. B., Pt. II, pp. 108-111. I believe that this

* The type of Ogilby's *L. Roylei*, but named *L. dipus* in the plate; comp. Royle's Illust. p. lxix. The coloration of the animal in this plate is very incorrect.

† The length of the palma and nails one-eighth inch must be a misprint, and it is evident that all the measurements have been taken from a skin, so that they are approximations.

‡ [I do not think that there is sufficient evidence for this statement. On comparing Hodgson's description of *L. Nepalensis* with that of *Curzonie*, the differences between the two can be noticed with little difficulty. The size of *Curzonie* varies greatly, many specimens equalling *Nepalensis* in size, but the fur is very distinct. Hodgson's description of *Curzonie* appears to me rather to apply to the species which I have re-described under the same name, than to *Roylei*.—F. Stoliczka.]

is a distinct and undescribed species. Adults are very much larger than Hodgson's original specimens, being nine inches and upward in length, rivalling or exceeding *L. rufescens* in size, and the prevailing colour is isabelline. This species which has been excellently described by Dr. Stoliczka, l. cit., is easily distinguished from *L. rufescens*, by its longer and softer fur.

It may be objected that Hodgson having already described *Lagomys Roylei* under the name of *L. Nipalensis*, must have had a distinct species before him when he described *L. Curzoniæ*. But *L. Nipalensis* is of a very different colour from the typical *L. Roylei*, being, as described by Hodgson, deep bay from the snout to mid body. It was so distinct in appearance that Blyth described the young of *L. Roylei* as *L. Hodgsonii*, immediately after Hodgson had described and figured *L. Nipalensis*, and the latter species is kept distinct from *L. Roylei* by Waterhouse (Rod. pp. 24, 26.) and by Dr. Gray* Ann. and Mag. Nat. Hist. Sept. 1867, p. 220. I am myself inclined to believe that Mr. Blyth was quite right in uniting *L. Nipalensis* with *L. Roylei*, because the structural differences pointed out by Waterhouse appear scarcely of sufficient importance to prove the animals distinct, whilst the presence or absence of rufous coloration in mammals is not usually of much importance. But at the same time there do appear to be some slight differences between the forms inhabiting the Himalayas, and the divergence is greatest between the Nipal and the Sikkim races, a far greater difference existing than between other forms which Mr. Hodgson, who held extreme ideas on the subject, described as distinct species. The materials before me are insufficient to justify an accurate judgment in this matter, but they indicate the possibility of the three races being distinguishable in this manner.

Lagomys Roylei, verus. Six to eight inches; fur less soft, brown with a greyish tinge.

Do. var. Nipalensis. Length seven to eight inches, fur chesnut or bay above.

Do. var. Curzoniæ. Length six to seven inches, fur mouse brown, very soft.

At the same time the differences are so small that a good series of specimens would probably show a complete passage from one to the other.

Even if the *Lagomys* seen by Hooker north of the Sikkim frontier were different from the Sikkim species, the name applied to it by him *L. badius*, implies a very different coloration from that of Dr. Stoliczka's *L. Curzoniæ*.

* Dr. Gray also keeps *L. Hodgsonii* distinct, though it is considered by Waterhouse identical with *L. Nipalensis*, and both were united to *Roylei* by Mr. Blyth himself in his Catalogue of the Mammalia in the Asiatic Society's Museum, p. 133.

RUMINANTIA.

CERVUS AFFINIS, Hodgs. Jerdon, Mam. Ind. No. 218, p. 251.—Blyth, Cat. Mam. Mus. As. Soc. No. 480.—Blyth, J. A. S. B., Vol. xxx, 1861, p. 188.

C. Wallichii, Cuv. apud Blyth, J. A. S. B., Vol. xxiii, p. 736.—Hooker, Him. Jour., Vol. II, p. 214, (wood-cut of horns).

This animal must be expunged from the list of mammals found in Sikkim and, consequently, has no right to appear in Jerdon's Mammalia. After much enquiry in the country, I am satisfied that it is not found in Sikkim at all, nor yet in that portion of the Chumbi valley which is near the Sikkim frontier. I could not hear of its occurrence in the country north of Sikkim, and I am inclined to believe that its range is entirely eastern.

This opinion, at which I had arrived quite independently, (for I had not looked at the paper in J. A. S. B., 1851, Vol. xx, p. 388, until after writing it) entirely confirms Mr. Hodgson's account of the animal's range. I think Dr. Jerdon must have overlooked this paper, or he would scarcely have given the animal so inappropriate an English name as the Sikkim Stag. Captain Elwes was especially desirous of obtaining a pair of the horns, and enquired about them from the people who came to meet us with the Sikkim Rāja. All declared that this Stag is only found at a considerable distance beyond Chumbi. Mr. Hodgson, l. c. p. 392, learned that it only occurs as a straggler in the Chumbi valley, that it is unknown in Northern Bútán, and that the region inhabited by it is entirely Tibetan.

MOSCHUS MOSCHIFERUS, L.—Jerdon, Mam. Ind. No. 224, p. 266.—Hooker, Him. Jour., Vol. I, p. 269.

The musk deer occurs, but is not common on the Chola range: it is found much more frequently in the upper Láchén and Láchúng valleys.

PROCAPRA PICTICAUDATA, (Hodgs.). Blyth, Cat. Mam. No. 534, p. 173. Hooker, Him. Jour., p. 157, and wood-cut, p. 139.

Hooker records l. c. his having seen both this animal and the Chiru (*Kemas Hodgsonii*) at Lake Cholanú. I did not hear of it in Sikkim, nor has it, so far as I am aware, been met with. The Súbá of Kambajong, as mentioned in the first part of these notes, brought a fresh skin to Kangra Lama.

KEMAS HODGSONII, (Abel). Blyth, Cat. Mam. No. 535, p. 173.

Antelope Hodgsonii, Hooker, Him. Jour., Vol. ii, pp. 132, 156, and wood-cut, p. 157.

Hooker found the horns of the Chirú near Momay Samdong in the Láchúng valley, and saw the animal at Cholanú Lake. The Tibetans assured us that it is not now found within a long distance of the frontier, and appeared greatly surprised when we told them it had been seen by Hooker. It

may occur near Choramú only at particular seasons, but it is not probable that Hooker was mistaken about so fine and conspicuous an animal.

NEMORHEDUS BUBALINUS, Hodgs. Jerdon, Mam. Ind. No. 230, p. 283. *Gya*, Bútia. *Sichi*, Lepcha.

The Serow is not rare in Sikkim, but like all other mammals, it shuns the leech-infested belt between 5,000 and 10,000 feet during the rainy season, at which period it is said in the outer hills to descend into the deep valleys. I frequently saw the tracks of this goat-antelope in the forests around Láchúng which are out of the leech region at 8,000 to 10,000 feet. It does not ascend to any great elevation.

N. GORAL, Hardwicke. Jerdon, Mam. Ind. No. 231, p. 285. "Ragen" Hooker, Him. Jour. Vol. ii, p. 98.

The goral is common on the grassy and rocky cliffs west of the Láchúng valley from Chúngtán to Láchúng, and is also found in the Láchén valley. At the period of my visit all were between 8,000 and 10,000 feet, but in winter they are said to descend much lower. I could not hear of any being found on the Chola range, and I suspect the animal is only to be met with in the interior of Sikkim. I saw goral several times near Láchúng. It keeps to rocky cliffs and grassy slopes, and does not appear to inhabit forest.

HEMITRAGUS JEMLAICUS, H. Smith.—Jerdon, Mam. Ind. No. 232 p. 286.

I have been assured that the Tahr is found in Sikkim, but I did not see it, nor has any one else whom I know. It is said to inhabit the forests high up on the sides of the Tista valley near Chúngtán. As it is well-known to be a native of Nípal, its occurrence in Sikkim is highly probable.

An animal was described to us by the Tibetans as inhabiting parts of Tibet north of Jigatzi, which was probably the Himalayan Ibex, *Capra Sibirica*.

OVIS NAIHURA, Hodgs. Jerdon, Mam. Ind. No. 237, p. 296.—*Ovis Ammon*, Hooker, Him. Jour. Vol. ii, p. 132, wood-cut, p. 140. *Náo* or *Gnáó*, Tibetan.

OVIS AMMON, L. Hooker, Him. Jour. Vol. i, (? p. 243), wood-cut, p. 249, *Nyeng*, Tibetan.

The burlhel is not known to occur on the Chola range to the southward, but it is found near the Tankra pass, and scattered over the grassy hills in the higher valleys of the Láchén and Láchúng. In September and October I never saw any below 14,000 feet.

The burlhel is undoubtedly the wild-sheep to which Hooker refers under the name of *Ovis Ammon*, and of which he speaks as being seen occasionally near Momay Samdong. That such is the case is proved by the name he applies to it "gnow." I cannot help thinking it highly probable that he

only saw burhel also in the Yangma valley, in East Nípal. A herd of rams of *O. nahura*, although inferior in size to the true *Ovis Ammon*, would certainly strike any one seeing them for the first time by their proportions, but it is possible that the sheep seen on this occasion may have been the larger kind. So far as Sikkim is concerned, however, every enquiry made by us elicited the assurance that the true *Ovis Ammon*, or *Nyeng*, never occurs south of the Donkia and Kongra Lama passes, though frequently met with at a short distance to the north in Tibet; so that in this respect, at all events, Jerdon is perfectly correct in excluding it from his Mammals of India, p. 298, as not found on the Indian side of the Himalaya.

AVES.

Order RAPTORES.

Vulturidæ.

A large vulture was occasionally seen, but not sufficiently near to enable either Captain Elwes or myself to ascertain the species or even the genus. Probably it was *Gyps Himalayensis*, Hume, Scrap Book, Part I, p. 12. which has now been determined by Mr. Gurney to be a good species and distinct from *G. fulvus*, Gm., to which the Himalayan bird was assigned by Dr. Jerdon.

Falconidæ.

7* *GYPÆTUS BARBATUS*, (L.)—The Læmmergeyer has not previously been recorded from the Himalayas east of Nípal. I did not meet with it on the Cholá range, nor within the limit of forest in northern Sikkim. It is, however, common in the upper Láchén and Láchúng valleys above 14,000 feet. Neither of us succeeded in obtaining a specimen, although several of the birds passed at no great distance. They looked small both to me and to Captain Elwes, and I hope that specimens will hereafter be obtained for comparison. I should not have mentioned the apparent size, but that the only Læmmergeyers I have ever seen alive are the small *G. meridionalis*, Keys. and Blas., of Abyssinia.

17 *TINNUNCULUS ALAUDARIUS*, (Gm.).

24 *ACCIPITER NISUS* (L.)—Both the Kestrel and Sparrow-hawk were common in the upper Láchén and Láchúng valleys after the middle of September, evidently migrating southwards. None were seen on the Chola range at the end of August. The kestrel was seen a few days sooner than the sparrow-hawk.

47 *BUTEO PLUMIPES*, Hodgs.

A single example of this rare buzzard was shot by a shikari at an elevation of about 13,000 feet near Yeomatang in the Láchúng valley. It proved to be, as ascertained by dissection, a female in fine plumage. It agrees

* The numbers are those of Jerdon's Birds of India.

excellently with Hodgson's original description. The following is a full account.

Plumage throughout, above and below, dark umber brown, a little darker, if anything, below than above, slightly paler on the rump, faintly glossed above with purple except on the head. Shafts of the body feathers black. Lores covered in front with white feathers, behind with radiating black hairs. About the nape there are some faint rufous edgings to the feathers; a few white spots appear on the scapularies, only to be detected by turning back the upper feathers. Primary quills very dark for a considerable length near the tip, paler, with transverse white or whitish bars near the base, shafts white at the base, becoming black at the tip only. Secondaries a little paler than the primaries and with white or whitish bars. Under-wing coverts umber. Tail feathers dark umber, rather indistinctly barred with pale umber, above pale with white hairs beneath, the bars becoming obsolete towards the base, about one and a half inches at the tip of each feather unbarred, extreme tip pale.

Iris pale brown; bill black towards the tip, pale towards the base; cere, gape and legs yellow, claws black. The first four primaries deeply emarginate on the inner webs, the 2nd, 3rd, 4th, and 5th, but not the first, on the outer.

The principal dimensions were taken on the fresh carcase, only those of the beak, tarsi and toes are from the skin. Length 20 inches, wing 16, tail 9·25, tarsus 2·9 feathered in front for 1·5, mid toe without claw 1·5, its claw measured round curve 0·9, outer toe 1, its claw 0·65, inner toe 0·95, its claw 1·15, hinder toe 0·8, its claw 1·15, bill straight from end of cere 0·88, round curve 1, from gape 1·47. The 4th primary is the longest, the 3rd shorter by 0·2 in one wing, 0·35 in the other, 2nd by 1·6, 1st by 4·75 in one wing, 4·4 in the other. The closed wings reached to within one inch of the end of the tail.

The tarsi have 9 or 10 broad scutes behind for the lower half of their length, above this are hexagonal scales. In front are hexagonal scales only, a little larger than those at the sides above, but becoming small near the feet.

The discovery of a second specimen of this buzzard, coinciding in coloration with that first obtained by Mr. Hodgson, renders it far more probable that this is really a good species, and not a mere accidental phase of plumage of some other.

Of the Indian species to which it might be referred, *Buteo ferox* (*B. canescens*, Hodgs.) is out of the question, being much larger. *B. desertorum* (*B. rufiventer*, Jerdon), which comes nearest in size, is distinguished by its rufous colouring, especially on the underparts, of which there is not a trace in *B. plumipes*. *B. vulgaris*, which is now excluded from the Indian fauna, does not appear to assume so uniform a plumage. Moreover, on comparing

the Sikkim specimen with the series in the Indian Museum, I found that in no case have any of the three species named small hexagonal scales in front of the tarsi as in *B. plumipes*.* There is some variation in this character, but all differ widely from my specimen. Both *B. vulgaris* and *B. desertorum* also appear to have shorter toes.

Mr. Blyth (Ibis, 1866, p. 245) considers *B. japonicus*, Schl., (Fauna Japonica, Av., t. vi. and vii.) probably identical. This is of less importance at the present moment, because Mr. Hodgson's name has priority, but disregarding the question of plumage, the scutes on the tarsus of *B. japonicus* are said to be broader, but less high than in *B. vulgaris*, and there are about 8 in front and 12 to 15 behind. The dimensions are a little smaller than those of *B. plumipes*, wing 13½ inches (french, = 14½ english) in the adult female. The only conclusion at which I can arrive is that *B. plumipes* is a good species, and that *B. japonicus* is probably distinct.†

56 MILVUS GOVINDA, Sykes.—The only kite I have brought from the upper Láchung valley, shot at 8,000 feet, belongs to the common Indian race, but a specimen from Tamlung and another from Darjiling are of the large *M. melanotis*, Tem. and Schl., *M. major* of Hume. Kites, *M. Govinda*, I believe, were seen up to about 12,000 feet.

The paucity of Raptorial birds in Upper Sikkim is most striking. I did not notice a single true falcon or eagle; and kites, kestrels, sparrow-hawks, and Lammergeyers are the only kinds at all frequently seen.

Order—INSESSORES.—Sub-order—PICARÆ.

Picidæ.

161 PICTUS HYPERYTHRUS, Vig.—This is the only woodpecker which I saw in the pine forests of upper Sikkim. Even this is rare; only two specimens were obtained during our stay, one at about 10,000 feet in the Láchung valley, the other at about 9,000 in the Láchén. The latter is a young bird, and has dusky bars on the breast. The change from the fauna of outer Sikkim, where woodpeckers abound as they do throughout Malayasia, is strikingly exemplified by this family. It is doubtful, if *P. hyperythrus* has been obtained in the neighbourhood of Darjiling; specimens reported to have been brought thence were probably shot in the interior.

* Mr. Hodgson's original specimen of *B. plumipes*, however, is described, P. Z. S., 1845, p. 37, as having the tarsus scutillate before and behind.

† Since writing the above, I have seen Dr. Jerdon's remarks on this species in the July number of the Ibis, p. 340. He also considers the species distinct, but says the toes are peculiarly short. I trust to be able hereafter to compare my specimen in Europe.

Cypselidæ.

103 COLLOCALIA FUCIPHAGA (Thunb.).

Common on the Cholá range up to at least 12,000 feet, and throughout the Tista valley at low elevations. I did not meet with any swift in Upper Sikkim.

Upupidæ.

251 UPUPA EPOPS, L.—Not rare at high elevations in Northern Sikkim. I saw it as high as 15,000 feet at Momay Sandong. Very probably all seen were migrating from beyond the Himalayas, as it is scarcely probable that any breed at this elevation.

Sub-order—PASSERES.

Nectarinidæ.

629 ÆTHOPYGA IGNICAUDA (Hodgs.).—Common in rhododendron and pine jungle at about 11,000 feet on the Cholá range in August, feeding upon flowers in open glades. All seen were young males in non-breeding plumage, or females.

I have no specimen, but I believe the identification of this bird is correct. Several were shot by Captain Elwes. No *Nectarinidæ* were seen in Upper Sikkim.

Ampelidæ.

629 MYZORNIS PYRRHOURA, Hodgs.—Common in the same place as the last species, hunting amongst the brushwood and over the mossy banks. I shot one on the ground. It was evidently hunting about the moss for insects. Mr. W. S. Atkinson obtained specimens on the Singalelá range. None were seen in Upper Sikkim.

In Mr. G. R. Gray's new Hand list of birds *Myzornis* is placed as a subgenus of *Yuhina*, between *Phyllornis* and *Criniger* in the *Phyllornithinæ*; a view not borne out by the structure of the birds, nor by their nidification, so far as that is known. I doubt its being an improvement on Jerdon's classification.

627 YUHINA OCCIPITALIS, Hodgs.—This bird, which Dr. Jerdon says is rare near Darjiling, is very common and abundant in the pine forests between 8,000 and 10,000 feet in the Láchén and Láchúng valleys. It is found in small flocks usually associated with other species. The following measurements were taken on a freshly killed bird; length 5, wing 2·4, tail 2, tarsus 0·7, bill 0·55 inches.

626 Y. GULARIS, Hodgs.—This is less common than the last in the pine forests about Láchúng, though still by no means rare. It is common above 10,000 feet on the Cholá range, where I did not meet with *Y. occipitalis*.

623 *IXTUS FLAVICOLLIS*, Hodgs.—I obtained two specimens near Lamteng in the Láchén valley at about 9,000 feet, which seem rather smaller than Darjiling specimens, as appears by the following comparison:—

	Wing.	Tail.	Bill from gape.	Tarsus.
Specimens from Láchén valley,	2.25	1.8	0.5	0.72 & 0.78
„ from Darjiling (1,)	2.52	2.	0.62	0.8
„ „ (2,)	2.65	1.88	0.56	0.75

622 *PROPARUS VINIPECTUS*, Hodgs.—This species does not appear to have been noticed from Sikkim before; at least I can find no mention of its occurrence so far east. I obtained two specimens, one from pine forests in the Láchén valley at about 11,000 feet, the other on Sinchal, close to Darjiling. The measurements rather exceed those given by Jerdon.

	Length.	Wing.	Tail.	Bill from forehead.	Tarsus.
1.—Láchén valley,	5	2.25	1.9	0.3	0.9
2.—Sinchal,	5	2.35	2.0	0.32	0.95

Iris yellow with a reddish tinge, bill dusky above, livid below, legs livid. The head is not crested.

621 *P. CHRYSÆUS*, Hodgs.—*P. chrysotis*, Blyth, and G. R. Gray. I obtained a single specimen in the Láchén valley at about 9,000 feet. Captain Elwes shot two or three in the same valley at a somewhat lower elevation. In my specimen, a male, the measurements are—wing 2.15, tail 1.8, bill from forehead 0.32, tarsus 0.88 inches.

The name *chrysotis* is evidently inappropriate, and so clearly due either to a misprint or an error in a label that although first published, I think Jerdon quite right in using Hodgson's name for this bird. Surely the law of priority does not extend to misprints.

618 *MISLA IGNEOTINCTA*, Hodgs.—Common in both the Láchén and Láchúng valleys up to about 9,000 feet, but not higher, in company with *Fuhinæ*, tits, and other birds.

616 *SIVA STRIGULA*, Hodgs.—I met with this bird at about 10,000 feet on the Cholá range, and again in the Láchúng valley at about 9,000. In the latter locality it appeared not to be very common. The only specimen preserved has the orange of the head confined to the forehead, the crown being rufous olive. As the colours of the lower parts also are duller, this is probably a female; *comp.* Stoliczka in J. A. S. B., 1868, Pt. ii, p. 50.

ALLOTRIS XANTHOCHLORUS, Hodgs.—I obtained one specimen at 9,000 feet in the Láchén valley. It was in a mixed flock of small Sylviads; (*Phylloscopi*, &c.), *Ægithalisci*, and *Fuhinæ*. I have since received another specimen from Darjiling, probably a male. My specimen from the Láchén valley is a female, and agrees well with Dr. Stoliczka's description, J. A. S. B., Part ii, 1868, p. 50. The back is a rather yellower green than that of the (supposed) male, abdomen greenish yellow. Dimensions taken before

skinning—length 4·7, wing 2·4, tail 1·85, tarsus 0·75, bill from forehead 0·3, from gape 0·55 inches. Iris dark brown, bill black above, bluish grey below; legs purplish horny.

Crateropidæ.

376 *HETEROMORPHA UNICOLOR*, Hodgs.—This I only saw in one place in the Láchúng valley, between 7,000 and 8,000 feet of elevation. The birds were in flocks, skulking in dwarf bamboo jungle in the usual *Crateropidine* manner.

381 *CONOSTOMA ŒMODIUM*, Hodgs.—This also I met with but once. I came upon a flock making a great noise amongst dwarf bamboos at about 11,000 feet elevation on the Cholá range.

Perhaps neither of the last two birds should have been comprised, as neither was found above the lowest limit of pines.

417 *TROCHALOPTERUM SUBUNICOLOR*, Hodgs.—This appears to range much higher than its congener *T. chrysopterum*. I shot it at about 11,000 feet on the Cholá range, and about 9,000 in the Láchúng valley. Iris yellowish grey.

I cannot at all admit the justifiability of separating this species, *T. phænicum* and *T. squamatum* from the other forms of *Trochalopterus*, as is done by Horstfield and Gray. To place these three forms in a distinct genus from *T. chrysopterum* and *T. affine* appear to me a violation of natural affinity. There is no difference in the shape of the wing to which any importance can be attached. As a rule the 6th primary is the longest in all, but both the 5th and 7th are so nearly the same length, that specimens may be found in which either of them slightly exceeds all the others. Then, as to the bills, *T. subunicolor* differs quite as much from *T. phænicum*, as the latter does from *T. chrysopterum* or *T. affine*. The structure of the feet, general dimensions, the plumage, and habits are precisely similar in all, and I thoroughly agree with Dr. Jerdon in classing all together. If any of the group deserve separation, it appears to me that the forms from the Malabar hills *T. cacchinans*, *Jerdoni* and *Fairbanki*, are better entitled to distinction than those placed in Mr. Gray's genus *Pterocyclus*, a name long previously employed amongst the Mollusca, as has repeatedly been pointed out before.

419 *T. AFFINE* (Hodgs.).—This is the only *Crateropidine* which can be said to belong fairly to the fauna of sub-alpine Sikkim; it ranges much above all other forms, and Jerdon is quite right in his suggestion that it frequents the higher mountains. On the Cholá range it abounds at 11,000 to about 13,000 feet, in rhododendron scrub and on the skirts of the pine woods, and in Northern Sikkim I found it far from rare at the same elevation or a little lower. Its habits are precisely the same as those of *T. chrysopterum*, and other allied forms. Iris olive.

Hirundinidæ.

93 CHELIDON CASHMIRIENSIS, Gould.—Common on the Chola range about the upper limit of forest, 12,000 to 13,000 feet. It was chiefly seen hunting over streams and lakes.

Laniidæ.

258 LANIUS TEPHRONOTUS (Vigors).—Common at Láchung, 8,000 to 9,000 feet in the beginning of September, but three weeks later all had disappeared. Many of those seen were in young plumage with hair on the breast, back, and scapulars.

Campephagidæ.

274 PERICROCOTUS SOLARIS, Blyth.—I shot a female from amongst a flock at about 10,000 feet elevation near Láchung.

There is evidently a misprint in Jerdon's description of the female of this bird. It is the back which is olive green, the lower parts are deep yellow passing into whitish on the throat. The rump is dark yellow with a slight brownish tinge.

The female of *P. solaris* is distinguished from that of *P. brevirostris* by its shorter bill, greyer head, ashy ear coverts, whitish throat, and especially by wanting the broad yellow forehead of the last named species, which I found abundant in the Tista valley at elevations below about 6,000 feet.

Muscicapilæ.

296 HEMICHELIDON SIBERICA, (Gm.). — *H. fuliginosa*, Hodgs.

One young specimen obtained in the Lachen valley at about 9,000 feet.

294 CHELIDORHYNX HYPOXANTHA (Blyth).—Common in pine forests at the foot of the Chola pass at about 12,000 feet elevation. In the interior I did not notice it above about 8,000 feet, below that it abounded. It was usually seen in small flocks, hunting about trees.

319 SIPHIA STROPHIATA, Hodgs. —The only fly-catcher commonly seen in the pine woods of the Láchung and Lachen valleys. Here it was found up to an elevation of 12,000 feet, associating with tits, Sylviads, and *Leuli*. It was also common on the Chola range at the same elevation. The white on the rectrices decreases on the outer feathers, as noticed by Stoliczka in specimens from N. W. Himalayas. (J. A. S. B., 1868, Part ii, p. 32).

The plumage of the young bird does not appear to have been described; the following is that of a specimen shot at Yeomalong, in the upper Láchung valley, on September 12th. Upper parts and sides of the head and neck brown, the feathers of the head with narrow brownish yellow streaks down the centre; these increase in size till, on the back, the feathers are brownish yellow with dusky brown margins; the same on the rump, but the colour is a little less brilliant. Quills and coverts dark brown, broadly edged with rufous brown,

the last secondaries (or tertiaries) being entirely rufous; tail as in the adult; throat and breast brownish yellow, the feathers with dusky edges, giving a scale-like appearance; flanks duller; lower abdomen, vent, and under-tail coverts white.

CINCLIDE.

348 *CINCLUS CASHMIRIENSIS*? Gould.—Blyth has already mentioned the occurrence of this dipper in Sikkim, Ibis, 1866, p. 374. I found it far from rare in the upper parts of the Láchén and Láchúng valleys, at elevations exceeding 14000 feet.

The specimens vary much in plumage. The only two I have retained are smaller than the dimensions given by Jerdon and Salvin (Ibis, 1867, p. 117), and they do not exactly agree in coloration. In that which I look upon as adult, or near adult, the head and neck above and at the sides, and the upper part of the back are dull brown, a white spot above the eye, and another smaller one below, middle and lower back cinereous with dark brown margins, tail cinereous, quills and wing coverts brown, the outer webs cinereous, the secondaries and greater coverts with narrow white tips; throat and breast white, abdomen brown, the feathers with slight white edges, flanks and under tail coverts cinereous; bill black, tarsus (when alive) purplish grey, wing 3.4, tail 1.9, tarsus 1.1, bill from gape 0.9, from forehead 0.65 inches.

Another specimen, probably younger, has some grey mixed with the brown of the head feathers, and the centre of the abdomen, as far back as the thighs, white, not so pure as on the breast, the feathers being brownish below; there are traces of dark margins to the breast feathers also; wing 3.6, tail 2.05, tarsus 1.13, bill from gape 0.9, from forehead 0.65 inches.

If these birds belong to *C. Cashmiriensis*, it is evidently a variable species.

347 *C. ASIATICUS*, Swains.—This ranges, in the summer, as high as 12,000 feet at least, and I have a specimen shot at that elevation at Yeoma-tong in the Láchúng valley. I saw brown birds which I noted at the time as belonging to this species up to 14000 feet, and I believe they were correctly identified, but as I secured none, they may have belonged to the next. Towards the end of October, I saw this dipper in the great Rangít river, not 1000 feet above the sea.

349 *C. SORDIDUS*, Gould.—A single dipper which I shot at about 15,000 feet on the Cháchú stream below Phálúng, close to the Kongra Lama pass, only differs from the description of this species by its rather larger size; it is a little darker in colour than Gould's figure in the Birds of Asia. I took it at the time for *C. asiaticus*, and was surprised at seeing that bird at so great an elevation, in a place where the fauna is distinctly Tibetan. There is a cinereous tinge on the outer margins of the quills on the upper coverts, which have dark margins, and on the tail. Wing 4 in., tail 2.3, tarsus

1.17, bill from forehead 0.68. Jerdon's measurement of the bill, $\frac{3}{4}$, must be from the gape.

It is quite possible that this may be a distinct local race, inhabiting Eastern Tibet, but I scarcely like to separate it without better means of comparison.

TERDIDE.

350 *ZOOTHERA MONTICOLA*, Vigors.—I obtained one specimen at about 10,000 feet in the Lachen valley, but I did not shoot it myself.

362 *MERULA ALBOCINCTA*, (Royle).—This black bird is common in rhododendron scrub, and on the skirts of forest on the Chola range at 11,000 to 13,000 feet. I saw it also at Láchúng in Upper Sikkim at about 8,000 feet. It appears to haunt banks of streams.

352 *OREOCYTES ERYTHROGASTER*, (Vigors).—Obtained by Captain Elwes near Láchúng.

478 *GRANDALA CÆLICOLOR*, Hodges.—The systematic position of this bird is very puzzling. I cannot see much affinity for *Myiornis*, and even less for *Calliope*, next to which Mr. G. R. Gray classes it in his 'Hand list.' I was wrong in placing the African *Pholidauges leucogaster*, in the same genus (Obs. Geol. and Zool. Abyssinia, p. 367), but I still believe that there is some affinity between the two. The bill of *Grandala* is certainly *Savicoline*, but I am strongly disposed to doubt whether, as a rule, far too great importance is not attached to characters of the bill by ornithologists.

Were I to judge *Grandala* by its flight, habits, and form of wing, I should unhesitatingly place it amongst the Starlings. The tarsi are, it is true, less strongly scutellated than in the *Sturnidae*, but still the scutellation towards the base is well marked, and the tarsus has no more resemblance to that of a *Savicola* than to that of *Sturnus*. On the whole perhaps the most natural position is in the thrushes, some of which, as the fieldfare, assemble into flocks in the winter.

Captain Speke was quite correct as to the gregarious habits of this bird, Mr. Hodgson's information, however, may have been derived from its being found solitary or in pairs in the summer. We first met with it at Momay Sandong (15,000 feet). A flock entirely composed of young birds or females used to visit a small grassy flat, close to our encampment, for several evenings after our arrival, and hunt about for insects which were attracted by the yak's dung, exactly as starlings do. All which I shot proved to be young males. I saw none at a lower elevation, but near Donkia pass, at above 17,000 feet, I met with a flock in which were some males in adult plumage, one of which I shot.

183 *PRATINCOLA INDICA*, Blyth.—Common in the Láchúng and Lachen valleys in September and the beginning of October, and apparently

migrating. I doubt if this bird breeds on the mountains of Sikkim; none were observed on the Chóla range.

386 *P. FURREA*, Hodgs. — Seen in Northern Sikkim occasionally at about 7,000 to 9,000 feet, but less common than about Darjiling.

497 *RUTICILLA RUFIVENTRIS* (Vieil.). Not seen on the Chóla range, but abundant in the Láchén and Láchúng valleys during the latter parts of our stay in them. The first specimen was shot at Momay Sandong (15,000 feet) on September 21st. In this case there could be no question that the birds migrated from beyond the passes, because none were seen before the date mentioned, even in the highest parts of the valleys at 15,000 to 18,000 feet, whilst afterwards they were abundant everywhere, and on our return in the middle of October we saw them at 4,000 feet in the Tista valley. It is mentioned by Dr. Stoliczka as breeding in Western Tibet. It certainly, I should say, does not breed in Sikkim.

504 *R. FRONTALIS* (Vigors). In contrast to the last species which abounds in the plains of India in winter, but crosses the snows to breed, this redstart, which rarely if ever, visits the plains, but which Jerdon found abundantly around Darjiling in winter, evidently breeds in the higher hills of Sikkim. I met with it on the Chóla range and again abundantly in the Láchúng and Láchén valleys at from 12,000 to 14,000 feet, and at Ycomatong on September 12th and 14th I shot three birds in spotted plumage. These young birds have the upper parts dark brown with isabelline spots, quills and wing coverts hair brown, the secondaries and coverts with rufous edges, throat and breast feathers dirty white in the centre, with broad brown margins, the white centres pointed at the end, presenting a peculiar scale-like appearance. Abdomen dull rufous or isabelline with some brown edgings which, however, have disappeared in one specimen; tail precisely as in the adult. The outer tail feathers in all have the outer web, except near the base, black, as well as the tip.

I several times at high elevations, both on the Chola range and in Northern Sikkim, saw another species of *Ruticilla*, but I never succeeded in shooting a specimen, nor did my fellow traveller. It was perhaps *R. cæruleocephala*, (Vigors).

505 *R. RUFCORNIS* ¹ *FRUGIVOSA* (Vigors). Jerdon's description of the habits of this bird, are, as usual, admirable. It is, however, found at a greater elevation than stated by him, and on the Chóla range I occasionally saw birds up to 11,000 and 12,000 feet, but at the same season I saw and shot others below 5,000 feet elevation. In Northern Sikkim it did not, in September and October, range above 7,000 feet. Mr. Blyth, in the *Ibis* for 1867, p. 16, refers to Dr. A. Leith Adam's second species allied to this, seen in Kashmir (P. Z. S. 1859, p. 179, No. 82 of the birds of Kashmir and Ladak). It is described as "smaller; colour a leaden ash, with several *white* feathers in the tail." Surely the female is referred to.

I am quite of the same opinion as my friends Dr. Jerdon and Dr. Stoliczka (J. A. S. B. 1868, p. 43.) as to the difference between this species and other *Ruticillæ*, but I rather doubt whether it should be placed in *Chimarrhornis*, as proposed by Mr. Hodgson and Dr. Stoliczka. The bill undoubtedly shows some similarity in form, a modification probably connected with aquatic habits of both birds, and the tail is rounded as noticed by Jerdon, but the wings are *Ruticilline*, and the general characters of the plumage of both sexes — structural character which, viewed in the light of evolution by descent from common forms, I should be inclined to think of more importance than the slight modifications of the bill and tail,—dissociate *R. fuliginosa* altogether forms *Chimarrhornis*. It appears to me, as it did to Dr. Jerdon, to form the type of a distinct subgenus which might be called *Rhyacornis*,* and which appears to me to have as good claims to separation as *Adelura* and *Chimarrhornis*. The characters are:

Rhyacornis, subg. nov. *Ruticillæ*: *Rostrum brevius et latius quam Ruticillæ, cauda magis rotundata. Femina à mari valde diversa, et rectricibus exterioribus basin-versus albis.*

499 *R. (Adelura) ERYTHROGASTRA* (Güld.)—Bill and plumage similar to *Chimarrhornis*, but the wings and tail are those of *Ruticilla*, and so are the habits to a great extent. I have seen this bird on the banks of streams and of lakes, but more frequently on rocky hill sides, and at times on the edges of glaciers. It was only met with at great elevations, never below 14000 feet, but in the highest parts of the Lachen and Lachung valleys it was far from rare, and Captain Elwes shot it at Cholanú Lake. I saw no females, at least I only saw birds in the plumage of the male, and all the specimens shot by me were males.

The following measurements were taken on fresh specimens before skinning.

	Length.	Wing.	Tail.	Tarsus.	Bill from forehead.
1	7	4·1	3·2	1·1	0·45
2	7·3	4·2	3·	1·1	0·45

Iris brown, bill and legs black.

R. Vigorsii, Moore, quoted by Jerdon as the female of this species, is considered distinct by G. R. Gray (Hand-list, I. p. 221). It is certainly very different from the bird figured as the female or young male by Gould in the Birds of Asia, and as it differs from *R. erythrogaster* in having the central rectrices dark coloured, and in the absence of a wing spot, (both rather improbable sexual differences), it is probably a distinct species.

506 *R. (Chimarrhornis) LEOCEPHALA* (Vigors).—Common on streams and around the edges of lakes, at elevations above 12,000 feet on the Chola range

* From *pvač* a stream and *špvis*.

and above 10000 in Northern Sikkim in August, September and the beginning of October. It evidently breeds in the higher ranges, and descends in winter to the valleys, as described by Jerdon. In the middle of October all the birds of this species in the Láchén valley had descended to below 10,000 feet elevation.

508 *IANTHIA RUFILATA*, (Hodgs.)—This is another bird found in the winter around Darjiling, which evidently breeds in the pine forests. I shot specimens at about 12000 feet both on the Chola range and in the Láchung valley. One bird, a female, killed in the last named locality, is immature and has only partially assumed the adult plumage. It has pale spots on some of the back and head feathers, whilst the nestling feathers remaining on the breast are isabelline with dark margins.

DRYMOCHARES STELLATUS.—Gould P. Z. S. 1868, pp. 218, 219. Birds of Asia, Pt. XXI. A single male was shot by my shikari at Yeomatong in the Láchung valley at 12000 to 13000 feet. The specimen is in poor condition and much injured, so that I can give no trustworthy dimensions.

This form, although well distinguished by its peculiar coloration, appears to be scarcely entitled to rank higher than a sub-genus of *Brachypteryx*. I have elsewhere, in another paper on Sikkim birds, given my reasons for placing *Brachypteryx* near *Ianthia* in preference to classing it with the wrens, as is done by Jerdon. The usual position assigned to the genus amongst the *Timaliinae* (*Crateropidae*) or *Leiotrichinae* appears to me quite incompatible with the structure and habits of the Himalayan species.

513 *CALLIOPE PECTORALIS*, Gould. —Common on the Chola range, but less abundant in northern Sikkim; in both localities only seen, in August and September, above 12,000 feet, and usually above the limit of forest. It haunts rhododendron scrub in which it doubtless breeds, and is frequently seen on the hill side near bushes.

In the only male I possess there is no white moustachial stripe, and I can only find one male specimen out of 5 (4 mounted and 1 skin) in the Indian Museum, exhibiting this character. This specimen also has the white spots at the tip of the tail feathers much larger than in others. In my specimen, and in one apparently from the N. W. Himalayas, as presented by Jerdon to the Museum, there is a broad white forehead, not mentioned in Jerdon's description, and wanting on other specimens to which I have access.

The adult females (2 in number) shot by me, do not agree well with Jerdon's description, which may perhaps be taken from a young male. At all events in 2 adult females, and 2 young birds obtained in Sikkim, as also in the skin of a hen bird in the Indian Museum, there is no white whatever at the base of the tail. Adult females have the upper parts brown with a slight greyish tinge, wings hair brown with paler margins to the quills; tail blackish, feathers tipped white (not fulvous), but without any white at the

base, supercilia dull white, sides of head greyish brown, sides of neck, breast and flanks ashy; chin and middle of throat white, abdomen white also, but less pure, lower tail coverts slightly fulvous, thigh coverts dark brown. A rather younger female has a browner back and flanks and indistinct supercilium.

The young birds agree with Dr. Stoliczka's description. (J. A. S. B. 1868, Part II, p. 45) except that my specimens, which are perhaps females, have no white at the base of the tail.

The measurements of my Sikkim specimen, except the tarsus and bill, are less than those given by Dr. Jerdon.

	Wing.	Tail.	Tarsus.	Bill from forehead.	Bill from gape.
Male,.....	2.75	2.2	1.25	0.48	0.72
Female,.....	2.7	2.05	1.22	0.48	0.7
Ditto,.....	2.82	2.2	1.23	0.52	0.75

511 *CYANECULA SUECICA*. (L.)—This was seen occasionally in the latter part of September, and more frequently in October, apparently coming from the north and migrating southwards. I shot one bird at Momay Samdong on the 19th September.

In Mr. G. R. Gray's 'Hand list,' the Indian blue-throat is still classed as *C. caerulecula*, Pall., but Mr. Blyth, in the Ibis for 1867, p. 17, note, has shewn that it is identical with the Swedish form, the type of *Motacilla suecica* of Linnaeus, and until Mr. Blyth has been proved to be in error on this point, the Indian race must bear the latter name.

Sylvia.

558 *PHYLLOSCOPUS** *LUGEBRIS*, Blyth.—This appears to be the commonest warbler in Sikkim, and in all probability breeds abundantly in the higher parts of the hills. I met with it very frequently, solitary or in families, amongst the rhododendron bushes at elevations from 12,000 to 14,000 feet on the Choká range, and again from 10,000 to 13,000 or 14,000 in the pine forests of Láchung valley, associating in flocks with *Lophophanes* and other birds. The specimens shot by me have distinct whitish tips to the larger wing coverts, whereas in birds shot in the plains these are usually wanting, doubtless from their being gradually worn off; my birds also are more yellow beneath, and the axillaries and edge of the wing are clear pale yellow, whilst birds shot near Calcutta are mostly greenish on these parts. There is, however, some variation in this respect.

* If the type of *Phylloscopus*, Meyer, be *P. trochilus*, the Indian birds ascribed to *Phylloscopus* by Jerdon must be placed in that genus. G. R. Gray, in his recent Hand-list, separates the Indian birds, which he places under *Phylloscopus*, from *P. trochilus*, *P. rufus*, &c. classing these as *Asilus*, Mochring. I greatly doubt if the separation is justified by the structure of the bird. As I have not the means of clearing up this question, I use Jerdon's generic names,

525 *P. FULIGINIVENTER* (Hodgs.).—Blyth, *Ibis*, 1867, p. 21. *Horornis fuliginiventer*, Hodgs. Jerdon, *Birds of India*, II, p. 162. Short as is Mr. Hodgson's description, it contains the only characters worth noting. There is a mere trace of a pale supercilium, and the under side of the wing is of the same dusky olive as the breast. The tail appears rather rounded, and the legs strong resembling those of *P. Indicus* and *P. affinis*, and probably indicating similar wren-like habits. There is also a decided resemblance in the peculiar coloration of these three species. Wing 2.2 in., tail 1.75, tarsus 0.85, bill from forehead 0.4, from gape 0.5.

I obtained a single specimen in *Rhododendron* scrub at about 14000 ft. elevation near Monay Sandong. This bird is probably a resident in the higher regions of the Himalayas.

561 *P. AFFINIS*, Tickell. I shot two or three specimens of the birds in the Láchén and Láchúng valleys at moderate elevations, 8000 to 9000 feet. None were killed before 26th September, but I saw a small bird at Láchúng about the 9th September which might very possibly have been this species, as it had the same peculiar habits. It may migrate to Tibet to breed, but it is, I think, quite as probable that it nidificates in Sikkim.

The specimens obtained by me were hunting in high grass and low bushes for insects in a very wren like manner, or like a *Calamodyta* or *Aeroccephalus*; they were very difficult to flush, and settled again at a short distance. The habits of this bird, and its near ally *P. indicus*, appear to me quite different from those of other *Phylloscopi*. I have before (J. A. S. B., 1869, Part II, p. 181) called attention to the *Sitta*-like habits of *P. indicus* when on trees, an observation I have frequently had opportunities of repeating since.

566 *REGULOIDES PROREGULUS* (Pall.). *R. chloronotus*, Hodgs.—Two specimens obtained in Upper Sikkim at the end of September and beginning of October.

568 *R. EROCHROA* (Hodgs.).—I shot a specimen at about 13,000 feet on the Chokí range, Eastern Sikkim. It is doubtless a resident.

569 *ULLEIPETA BURKH* (Burton).—A single specimen only procured at Láchúng on the 28th September, together with *Phylloscopus affinis*, hunting in the same manner as that species, amongst low bushes and long grass.

578 *ABRORNIS CASTANICEPS*, Hodgs. Jerdon does not mention the broad yellow rump and upper tail coverts, which are much more brightly coloured and more conspicuous in this species than in *Reguloides proregulus*, (Pall.), and are shewn in the figure in Gray's genera of birds Pl. XLIX. There are one or two other slight omissions in the *Birds of India*, I therefore venture to give a fresh description.

Head chestnut above with a dusky streak at each side, increasing in breadth and distinctness posteriorly, lores, sides of head and neck, nape, throat, and breast grey, darker on the cheeks and nape; orbital feathers whitish; back

green; rump and upper tail coverts bright yellow; wings and tail brown, edged externally with green, the two outer tail feathers on each side with the inner webs white; wing coverts tipped with pale yellow; margin of the wing, under wing coverts, belly and under tail coverts the same bright yellow as the rump. Iris brown, bill dusky above, deep yellow beneath, legs horny, soles yellowish. Measurement taken before skinning. Length nearly 4 in., wing 2.1, tail 1.65, tarsus 0.65, bill from forehead 0.28, from gape 0.4.

Mr. Blyth, Ibis, 1867, p. 26, says this bird is decidedly a *Reguloides*. So far as the bill is concerned, it appears to me that it might be classed in either of the two genera, between which in part there is no clear distinction; the plumage is rather that of an *Abrornis*.

Troglodytidae.

333 *TROGLODYTES NIPALENSIS*, Hodgs.—The Nipál wren is common at high elevations. On the Choká range I especially noticed it above the range of forest, hunting over the loose moss-covered stones, which frequently form so large a portion of the hill sides, constantly entering the crevices between the blocks, and emerging again at a considerable distance. In the Láchén and Láchúng valleys, it was common in pine forests, at elevations above 10,000 feet. I usually saw the birds in small families, 3 or 4 together, hunting on the ground and low bushes, and with the same predilection for exploring hollows under stones. One of two specimens, from close to the Choká pass, is an old bird and measures, wing 2 in., tail 1.25, tarsus 0.75, bill from forehead 0.44, from gape 0.53. The other, from Yeomatong, is of decidedly more rufous tint, the bill is shorter and yellow beneath; this is probably a young bird. Its measurements taken before skinning were: Length 1.1, wing 2, tail 1.2, tarsus 0.8, foot 1.35, bill from forehead 0.4 inch.

329 *PNOPHYGA SQAMATA*, Gould.—This ranges up to about 9,000 feet in Northern Sikkim. All the specimens I saw belonged to the form called *Tesia reficenter* by Hodgson which I am disposed to believe distinct from *P. squamata* = *albiventer*, Hodgs., but I have not sufficient specimens for comparison.

327 *TESIA CASTANEO-CORONATA*, (Barton).—Not uncommon in Northern Sikkim at 7,000 to 10,000 feet. I saw several, but have only a single specimen. This bird is quite wren-like in habits, but keeps much less to the ground than *Troglodytes Nipalensis*. It is constantly on the move in low brushwood and grass, keeping up mean time a sharp monotonous single note repeated at regular intervals.

527 *HOREITES BRUNNEIFRONS*, Hodgs.—Mr. Blyth long since, J. A. S. B., XIV, 1845, p. 585, pointed out the similarity of this bird to *Tesia*; except the much longer and slightly more rounded tail of *Horeites*, there is but little

difference in structure between the two genera. The habits are remarkably similar, *Horreites brunneifrons* resembling *Troglodytes* in its movements even more than *Tesia* does. I watched a bird of the present species for at least a quarter of an hour one day, hunting over mossy rocks and diving into the hollows beneath them. If *Tesia* be a wren, I suspect *Horreites* must be classed with it. The note is precisely similar.

I shot *H. brunneifrons* twice in the Láchúg valley between 10,000 and 12,000 feet. Both specimens were moulting their tails, so that I could not take complete measurements. The wing measures 1·85, tarsus 0·75, bill from forehead 0·32, from gape 0·5 inch. The iris is brown, legs pale horay, bill blackish above, yellow near the base of the lower mandible.

Sittidæ.

218 *SITTA HIMALAYENSIS*, J. and S.—A single specimen, shot at about 11,000 feet on the Choká range, differs from Darjiling birds in the paler colour of the head, in a distinct pale spot at the back of the neck, and in the bill being rather shorter. The latter character, however, is slightly variable in most *Sitta*, and the pale head may be due to immaturity. Length, measured before skinning, 4·75, ins., wing 2·9, tail 1·45, tarsus 0·75, foot 1·5, bill from forehead 0·5. The two outer rectrices on each side have a distinct white spot near their tips much larger, farther from the tip and extending obliquely across the feather in the outer pair smaller, and often confined to the inner web close to the tip in the next.

In Northern Sikkim I observed no *Sitta* above about 7,000 feet.

Certhiadæ.

214 *CERTHIA NIPALENSIS*, Hodgs.—Common from 8,000 to 13,000 feet in the pine woods of Northern Sikkim, in which at the time of my visit I found it associating with flocks of *Lophophanes* and *Phylloscopi*. It appears in this region entirely to replace *C. discolor* of Outer Sikkim. Measurement of a fresh specimen: Length 5·5, wing 2·8, tail 2·8, bill from forehead 0·5, tarsus 0·7, foot 1·5 inch. Iris brown, legs horny, bill blackish above, white below.

Paridæ.

637 *LOPHOPHANES DICHIROUS* (Hodgs.).—I at first thought that this must be a new species, as it agrees very poorly with both Hodgson's original description and Gould's figure in the *Birds of Asia*. In neither is any notice taken of the conspicuous whitish half collar. I find, however, that Dr. Stoliczka has received specimens from the Western Himalayas closely resembling Sikkim birds, and he tells me that on examining Mr. Hodgson's type specimen he found traces of the collar. I give a fresh description of this tit.

Upper parts dull ashy with a greenish tinge especially on the rump, quills and tail feathers brown with rather grayer margins. Forehead, sides of head and under parts dull buff or dark isabelline rather more rufous behind, sides of the neck isabelline forming a whitish half collar, paler than the underparts. Iris blood red, legs leaden gray, bill black. Length, taken before skinning, 4·6, wing 2·8, tail 1·9, tarsus 0·8, bill from forehead 0·33 inch.

Far from scarce in the higher pine forests of the Chola range, and common in Northern Sikkim from 8,000 to 13,000 feet, associating with the next two species.

641 *L. BEAVANT* (Blyth).—? *Parus Atkinsoni*, Jerdon, Birds of India II, p. 276.

Adult. Head above with moderately long crest, glossy black; nuchal spot and a large white spot on each cheek commencing in front at the gape and including the ear coverts white, often tinged with yellow; back dark ashy grey, often with an olivaceous tinge, wings and tail dark brown with bluish grey edging, inner margin of quills white; chin, throat and upper breast black without gloss, lower breast and abdomen rather pale grayish brown, more rufous behind; axillaries, under wing coverts and lower tail coverts pale ferruginous. Iris brown, legs leaden gray, bill black. Wing 2·6 to 2·8, tail 1·84 to 2·05, tarsus 0·73 to 0·8, bill from forehead 0·33 to 0·38 inch. These are the extreme measurements of six specimens.

Young bird. Top of head glossless black, spots on nape and cheeks usually pale primrose yellow, sometimes white, the black of the chin and throat ill-defined and passing gradually into the dull olivaceous gray, more or less rufescent on the abdomen. Crest very slightly developed. I cannot help suspecting that this is Dr. Jerdon's *Parus Atkinsoni*, the only difference appears to be the length of the tarsus in that form, which is less than in any specimen of *Loph. Beavani* which I possess, otherwise the measurements correspond exactly.

Loph. Beavani is by far the most common tit in the pine forests of Sikkim. Both on the Chola range, and in the northern valleys, I met with it in abundance.

I am inclined to believe that the upper figure in the plate of *L. rubidiventris* in Gould's Birds of Asia, pt. XI, represents this species.

642 *L. ÆMODUS*, (Hodgs.). Mr. Blyth pointed out in the Ibis for 1867, p. 34, that this bird is a *Lophophanes*. Not only is it so, but the crest is comparatively longer than in allied species. No complete description appears ever to have been given of it.

Adult. Head above and a long recurved crest glossy black; a rather large spot on the nape, and on each side of the head and neck, extending from the gape below the eye to a considerable distance behind the ear coverts, pure white; back dark ashy, often tinged with olivaceous, passing into

dull olive on the rump, wings and tail brown, edged olivaceous externally, the quills with whitish inner margins; all the larger wing coverts and some of the smaller primary coverts with white or isabelline spots, forming two very well marked bars; chin, throat, and upper breast, with the sides of the neck and breast, behind the white spot black, lower breast and abdomen fawn colour, flanks and under tail coverts rather olivaceous. Iris dark brown legs leaden gray, bill black. Length before skinning 4 to 4.1, wing 2.3 to 2.4, tail 1.65 to 1.8, tarsus, 0.65 to 0.7, bill from forehead 0.27 to 0.3 inch.

In the young bird the head is dull black, cheek spots primerose yellow, back olive, chin and throat brown, breast and abdomen olivaceous.

This is rather less common than the other two species but it is far from rare in the Sikkim pine forests and has the same distribution. It is closely allied to *L. melanophus*, (Vig.), but the coloration of the under parts is different.

In September and October, these three crested tits were found, old and young, associating in large flocks, together with *Phylloscopi*, *Certhia nipalensis*, and, below 10,000 feet, with *Yuhina*, *Minla ignotincta* and some other *Leiotrichina*, and *Siphia strophinata*. The tits are perhaps the most abundant of all, and may be seen actively hunting over the stems and branches of the different trees, pines, birch, &c. for insects.

635 *ÆGITHALISCUS IOUSCHISTUS*, (Hodgs.).—Forehead, centre line of head and nape, a collar completely encircling the neck, a band from the base of the lower mandible on each side, passing below the ear coverts, and all the lower parts, except the chin and throat, rufescent fawn, or dull ferruginous, lores and sides of head including a broad stripe over each eye, and a narrower one underneath, uniting behind and running back past the nape, glossy black; ear coverts fawn colour with black mixed; back grey with an olivaceous tinge, quills and wing coverts dark brown with slightly paler edgings externally, the quills with whitish inner margins; lower wing coverts paler fawn than the breast. Tail brown, the central rectrices darker on the inner web, the three inner pairs with bluish grey edges, the three outer pairs with the terminal half or rather more of the outer web whitish, and a small portion of the inner web near the tip. Chin dusky black, throat and centre of foreneck silky white, mixed with black. Iris *yellow*, (not brown as stated by Hodgson), legs yellowish brown, bill black. Length taken before skinning 4.5 inches, wing 2.25, tail 2.1, tarsus 0.7, bill from forehead 0.28 inch.

I met with this bird but twice. On the first occasion a flock of 20 or 30 were hunting about on birch and pine trees at about 10,000 feet near Láchung; on the second occasion a smaller flock were similarly occupied at about 9,000 feet in the Láchén valley. It is probably only found in the pine forests of Northern Nipal and Sikkim.

But for Gould's figure in the *Birds of Asia*, it would be difficult to recognise this bird.

Motacillidæ.

MOTACILLA HODGSONI, G. R. Gray, Ibis, 1865, p. 49.—? *M. lugubris* Pall. ? *M. Cashmiriensis*, Brooks.

I am rather surprised to find that all the *Motacillæ* shot in Upper Sikkim are of a species distinct from any found in the plains of India. I can scarcely have any doubt but that they belong to *M. Hodgsoni* of Gray, although it is probable that skins upon which that species was founded represent the winter, or at least the autumn plumage. I have two specimens agreeing well with Mr. Blyth's very brief account in the Ibis, having very little of the throat white and a distinct black line from the gape below the eye, but from the appearance of the chin and from another specimen in which the change to winter plumage has not proceeded so far, it is evident that in full summer garb the whole throat and chin are black, just as in *personata*, from which this form is chiefly distinguished by its black back in the breeding season, and its rather longer bill. I will give a somewhat more complete description of the summer and winter plumage of this bird.

Summer.—Forehead and forepart of crown and superciliary stripe, a large wing patch formed of the secondary, greater and medium coverts, narrow edges and tips to the primary quills and broad ones to the secondaries, two outer tail feathers, frequently but not always with the exception of the inner edges of the inner of the two or of both, and lower parts from the breast white, the rest of the plumage black. Perhaps the extreme chin and a narrow stripe running back from each side of the base of the lower mandible may remain white, but I suspect not.

In winter plumage, the bird appears scarcely to differ from *M. Luzoniensis*. In a specimen shot on October 4th, there is still a broader gorget on the breast than in that species, but otherwise there is no difference. The whole face is white, the moustachial stripe having vanished. The back is grey, hinder part of crown and nape black, wings and tail feathers as in summer plumage, except that the wing patch is not quite so pure a white. The flanks are greyish. It is possible that this may be an example of *M. Luzoniensis*, but I think not. All these species of wagtail are nearly undistinguishable in winter dress.

The intermediate plumage, which I suppose to be that on which the species was founded, has the face white, except a line from the gape below the eye, and including the ear coverts. The dimensions are

	Wing.	Tail.	Tarsus.	Bill from forehead.	Bill from gape.
1	3·7	3·65	1	0·57	0·72
2	3·7	3·5	0·96	0·52	0·72
3	3·45	3·45	0·9	0·53	0·7
4 winter plumage	3·7	3·7	0·97	0·5	0·7

Young birds are uniformly grey on the head and back, sides of head and lower parts white, with a narrow black pectoral gorget.

Without specimens I cannot tell if this bird differs from *M. lugubris*, Pall. The Japanese bird called *M. lugens* by Temminck and Schlegel in the *Fauna Japonica* (*M. japonica*, Swinhoe), and considered by them to be Pallas's bird, is shewn by Tristram (*Ibis*, 1866, p. 291,) to be entirely distinct, it being easily recognised by the greater portion of the primary quills being white, and Mr. Tristram considers the true *M. lugubris*, Temminck, to be an African species. But Mr. J. R. Gray in his 'Hand list' gives the locality for *M. lugubris*, Pall., (a different bird probably from Temminck's) as Northern Asia and Persia, and quotes the figure in Gould's birds of Europe.

Now the bird in winter plumage on Gould's plate agrees very well with *M. Hodgsoni*, and the bird in summer plumage only differs in having a narrow white line from behind the eye to the lower breast somewhat as in *M. alba*. The figures rather exceed the Sikkim birds in size, but in most of Gould's figures the dimensions are a little too large. The bill too in the plate appears a little shorter. I cannot, therefore, feel sure that the forms are identical, but I think it very probable that they are.

I met with no wagtails in Eastern Sikkim, but on ascending to about 12,000 feet in the Lachung valley I found them common. It is probable that they breed here, for I had seen none in the lower valleys, and but few migratory birds had made their appearance on September 11th when I first met with them. All were beginning to change their plumage.

BUDYTES VIRIDIS, Gm.—A single young specimen in grey plumage was obtained at Yeomatong (12,000 feet) on the 13th September. It was doubtless migrating.

Alaudidæ.

596 *PIPASTES AGILIS* ? Sykes.—Whether the common Indian tree pipit is to be called *P. plumatus*, Müll., *P. arboreus*, Bechst., *P. agilis*, Sykes or *P. maculatus*, Hodgs., I must leave others to decide. On Mr. Blyth's authority, Dr. Jerdon in his appendix refers *Anthus agilis*, Sykes, to *A. arboreus*, and substitutes Mr. Hodgson's name *maculatus* for the Indian race. Mr. Blyth in his commentary in the *Ibis*, 1867, p. 31, uses Sykes's name, but says that Sykes's type has more the appearance of the European *trivialis* (= *arboreus* = *plumatus* teste Gray Hand list, p. 251). Von Pelzeln (*Ibis*, 1868, p. 312,) is inclined to unite the Indian and European forms, but almost all European writers keep them distinct.* Lastly Mr. Hume (*Ibis*, 1870, p. 287,) points out that in his large collection he has representatives of all the varieties of the European tree pipit, together with numerous forms intermediate between them and the forms described by Hodgson and Sykes,

* Comp. Walden, *Ibis*, 1868, p. 312 note. Gray, Hand list l. c., &c.

but he adds that there are several of his Indian types unrepresented by European specimens. Under these circumstances I cannot help thinking it highly probable that there are really two distinct races, one found in Europe and Western Asia, the other in Eastern Asia, and that the two meet in India, and in the countries due North of India in which they interbreed. We know that India is the limit of Eastern and Western forms in several migratory birds, as *Motacilla Luzoniensis* and *M. alba* ;* *Erythrostera parva* and *E. leucura*, &c., and the same may very possibly be the case with the tree pipits. Chinese examples would go far to settle this question. If they are identical with the species from Bengal, whilst birds from Western India are, as we are assured, undistinguishable from European examples, it will be fair to look upon intermediate forms as hybrids.

I saw no tree pipits in Eastern or Northern Sikkim until about the 20th September, then they appeared in considerable numbers. Two specimens which I have preserved are more olive above and more fulvous below than those usually shot in the plains of India. They have broad fulvous edges to the wing coverts and green margins to the quills, whilst these are whitish in birds from Central India.

Comparing my specimens with the figure of *Anthus arboreus* in Gould's Birds of Europe, the bill in the former appears decidedly larger.

601 *ANTHUS STRIOLATUS*, Blyth.—Common in all the northern parts of Sikkim. I found it in clearings at a little below 7,000 feet early in September, and at Phalung above 15,000 in the beginning of October.

605 *A. ROSACEUS*, Hodgs.—It is, I believe, pretty generally admitted that this bird is distinct from (*A. Cecillii*, Sav. (= *A. cervinus*, Pall.). Mr. Hume is doubtful on the subject (Ibis 1871, p. 35), but Mr. Tristram (ib. p. 233.) is decidedly of opinion that it is a different race, and he further separates as *A. japonicus*, Temm. and Schl., the race found in China, Eastern Siberia,† &c.

Whether the latter be not *A. rosaceus*, Hodgs., in winter plumage remains to be determined. I cannot believe that the birds with olive backs and yellow axillaries which abound in Sikkim are represented by any stage of plumage of *A. Cecillii* ; at least such specimens as I have seen are certainly different. Specimens obtained by Major Godwin-Austen on the Khasi Hills were precisely like mine from Sikkim.

I found *Anthus rosaceus* common on the Chola range in August, and in the valleys of Northern Sikkim, from 12,000 to 15,000 feet. It doubtless breeds at these elevations, and it is, I believe, a constant resident in the Himalayas, rarely or never descending to the plains. I presume Mr.

* Can *M. dolkhuensis* be a hybrid race between these two. Some specimens from Western India have no more white on the wings than the European bird.

† Mr. G. R. Gray does the same in his Hand list, but marks *A. japonicus* as doubtful.

Tristram means the Himalayas by North India, when he says that this bird is common in the latter at all seasons. The distinction is important. Most Anglo-Indians when they speak of North India, mean the Panjab and North-West Provinces, not the Himalayas, and the fauna of the two regions is quite different.

761 ALAUDA (*Calandrella*) BRACHYDACTYLA, Temm.—Common in flocks in all the higher valleys of Northern Sikkim above 12,000 feet. I found it especially abundant at Yeomatong 12,000 feet, Momay, 15,000, and Phalung 16,000. At the latter place early in October the short toed larks were in flocks of several hundreds, just as they are found in March in the plains of India.

Jerdon, in the generic character of *Calandrella*, assigns a minute first primary to this bird. I cannot find it in any Indian specimens, and I have examined skins from Bengal, the North-West Provinces, and Nágpur besides those from Upper Sikkim. That it is also absent in European and African specimens is, I think, clear, because *Cabanis* in the Museum Heineanum, places *Calandrella* (*Calandritis*, Cab.) with *Otocorys* in a distinct subfamily from the other larks on account of their wanting the rudimentary first primary.

OTOCORIS ELWEST sp. nov. *O. torque frontali tenui, loris, genis, pileo cristis duobus sincipitalibus, et fascia lata pectorali nigris; fronte superiori, superciliis latis, regione auriculari, lateribus colli, mento, gula, pectore, inferiori abdomineque albis; nucha, ceruice, uropygio et rectricibus alarum pallide griseo-lilacinis; dorso pallide brunneo, unâ cum supracaudalibus fusco-striato; remigibus brunneis: primi pogonio externo albo, primariis cæteris albescens, secundariis albo marginatis et terminatis; tribus remigibus ultimis elongatis, et rectricibus mediis brunneis, latissime fulco-limbatis, cæteris rectricibus nigricantibus, duobus externis utrinque albo limbatis et terminatis; rostro nigro, subtus ad basin pallido, pedibus nigris. Long. tota 7.75: long. alæ 4.7, caudæ 3.2, tarsi 0.9, digiti posterioris cum ungue 0.75, unguis modo 0.38, rostri a fronte 0.4, a rectu 0.6.*

Narrow frontal band, lores, sides of head below the eye, and a band running back below the ear coverts, but not extending down the sides of the neck, crown of the head, two sincipital tufts, and the upper part of the breast black; forehead above the black band, broad supercilia running back from it, with the ear coverts, sides of the neck intervening between the black of the cheeks and that of the breast, throat lower breast and abdomen white; nape, back of neck, rump and wing coverts pale greyish lilac; back pale fulvous brown with narrow dusky central stripes to the feathers, upper tail coverts long, pale brown with narrow central stripes and whitish edges; quills brown, the first primary with a white outer web, remaining primaries with narrow isabelline edges and tips which become white on the secondaries, the three

last quills (tertiaries) and the central tail feathers brown with broad fulvous margins, the other tail feathers blackish with very narrow pale tips which can only be apparent in a freshly moulted specimen, the two outer rectrices on each side edged and tipped with white, most broadly on the outermost in which nearly the whole outer web is white; wing lining white; flanks fulvous; bill black above, pale near the base below; legs black, soles of feet yellowish.

This species is nearer to *O. penicillata* than to *O. longirostris*. It is distinguished from the former by the black of the sides of the neck not joining that on the breast, and apparently by its more lilac coloration. From *O. longirostris* it differs in its much shorter bill, black legs,* paler tints of the upper plumage, and the purer white of the lower parts. Specimens of *O. longirostris* in the Indian Museum have no black frontal band at the base of the bill, and the black of the crown is not distinctly defined, but passes into the brown of the nape, whereas in the new species the margin is distinct.

From *O. alpestris* it differs entirely in coloration, it is much paler above and purer white below, it wants the broad dark centres to the feathers of the mantle, and although my specimen is evidently in freshly moulted winter plumage, there is no trace of yellow on the head. Judging from Gould's figure in the Birds of Europe, *O. alpestris* wants the black frontal band of *O. Elwesi*, and the hind claw in the former is decidedly longer.

Three specimens of this horned lark were shot by Captain Elwes close to Kongra Lama pass, between 15,000 and 16,000 feet. I did not myself notice any at this spot, but I believe I saw some near the Donkia pass at nearly 18,000 feet elevation. The only specimen I possess, for which I am indebted to Captain Elwes, is in beautiful condition, having evidently first completed its autumnal moult.

Accentoridæ.

So far as I can judge, the Accentors have as good a claim to form a distinct family as the buntings or larks have. Scarcely any two ornithologists assign the same position to them, they rank alternately as thrushes, warblers, *Ampeidæ* and finches.

652 ACCENTOR NIPAENSIS. Hodgs.—This bird was by no means rare at high elevations in the Láchúng valley. Elwes obtained it at the Tankra-lá. I shot it on the hills above Yeomatong, and near Momay Sándong. I never saw it below 14,000 feet, nor far from a glacier, indeed the moraines of glaciers appeared to me its most common haunt. Sometimes it was solitary, but more frequently three or four birds occurred together, on the ground or on rocks. In the Láchén valley I did not meet with it, and in the upper part of that valley, it appeared to be completely replaced by *A. rubeculoides*.

* Two specimens of *O. longirostris* from the Western Himalayas in the Indian Museum have brown legs, like the figure in P. L. S. 1855, Aves, pl. CXI.

654 *A. STROPHIATUS*, Hodgs.—I obtained at Yeomatong, about 12,000 feet above the sea, a single specimen of what may be the young of this species. It differs in the breast being fulvous with broad black streaks instead of uniformly ferruginous. The claws too appear to be a little straighter. It is possible that this may be distinct, but it is at least equally probable that it is a young bird.

I am indebted to Mr. W. S. Atkinson for an adult specimen of *A. strophiatius* obtained on the Singalelá range.

656 *A. RUBECULOIDES*, Hodgs.—This bird was only seen in the Upper Láchén valley above 14,000 feet, together with *Leucosticte harmatopygia*, *Otocoris Elucsi*, and other birds belonging evidently to the Tibetan fauna. Whole head and neck greyish brown, rather browner above, and greyer below, back feathers blackish brown with broad rufous brown margins, shoulder of wing greyish brown, the quills and coverts dark brown with rufous or fulvous brown margins, broader on the last secondaries and coverts, and both ranges of the latter with whitish tips, tail feathers the same colour as the quills with very slight pale edges, breast ferruginous, abdomen whitish, flanks fulvous with a few dark streaks; iris clear pale brown, bill black, legs reddish brown. Dimensions taken before skinning: length 6·3, wing 2·9, tail 2·55, tarsus 0·95, bill from forehead 0·45 in.

This bird was met with on hill sides, and had, like *A. nipalensis*, an especial preference for the piles of loose blocks of rock and stones so common at high elevations and in glacier regions.

Fringillidæ.

MYCEROBAS MELANOXANTHUS, (Hodgs.).—Two or three specimens were seen at moderate elevations in Northern Sikkim. For the only one I have I am indebted to Captain Elwes. It was shot at about 11,000 feet in the Láchúng valley near Yeomatong.

PYRRHULA ERYTHROCEPHALA, (Vigors).—I shot one specimen at about 11,000 feet on the Cholí range, and another at the same elevation in the Láchén valley. It appears not to be a common bird in Northern Sikkim.

The head in the male is dull scarlet or bright ferruginous rather than dull crimson, chin black, and the white tips to be larger wing coverts are wanting in adults; the primary coverts in both sexes are dull black throughout, outer secondary coverts black with grey tips, the black decreasing in amount towards the body.

A young male has the head greenish like the female, but with some dashes of red, the throat and flanks also greenish, middle of the breast ferruginous.

	Wing.	Tail.	Tarsus.	Bill from forehead.
Male,	3·1	2·55	0·65	0·36
Female,	3·	2·5		0·35

Central tail feathers in both sexes about half inch short of the outer ones.

P. NIPALENSIS, Hodgs.—One specimen obtained on the Láchén valley at about 10,000 feet. Like the last it did not appear to be of frequent occurrence. Neither Captain Elwes nor I obtained the rare *P. erythraea*, Blyth.

733 *PYRRHOPECTES EPAULETTA*, Hodgs.—A male was shot by Captain Elwes at about 11,000 feet on the Cholí range. No specimens were obtained in Northern Sikkim, nor was this bird seen there.

Carpodacus. A female or young male shot near Láchúng differs both in coloration and structure from the female of *C. erythrinus*. The bill is longer and more pyrrhuline, the colour is uniformly hair brown above, darker than in *C. erythrinus*, and with no dark centres to the feathers, nor pale tips to the wing coverts, the rump alone having an olivaceous tinge. Beneath it is white, sullied on the throat, breast and flanks; darkest and with faint brown mesial streaks to the feathers on the breast. Wing 3·2, tail 2·2, tarsus 0·72, bill from forehead 0·45 inch.

About Chúngtán and Látong at the end of September I found flocks of rose-finches which at the time I took for *C. erythrinus* in summer plumage. I only preserved a male, but this also appears to have a larger bill than the common Indian rose-finch. I find another male specimen in the Indian Museum from Leh in Western Tibet, apparently of the same race. It is highly probable that these birds are the males of the above species.

It is doubtless also to this form that Bonaparte alludes (*Consp. Gen. Av.* I, p. 534.) under the head of *Carpodacus erythrinus*, when he says "*Specimina ex Kamtschatka a cl. Kittlitzo allata in Mus. Magnificæ vidimus, 'rostro latiore, magis incurvo; rubro colore viridiore, nec rosco, nec coccineo, 'tergo magis rubente.'*"

740 *PROPASSER THURA*, Bon. *P. frontalis*, Blyth.—This beautiful rose finch is common on the Cholí range above 12,000 feet, keeping mostly to the rhododendron bushes, but sometimes seen on grassy hill sides. It was rare in Northern Sikkim. The birds at the time of our visit were single or in pairs, and were probably breeding; but I saw no young ones. It was doubtless later in the year that they were found in flocks on mount Tonglú by Captain Beavan, at a lower elevation than any were seen by us. (*Ibis*, 1868 p. 177).

The following are the dimensions of *P. thura* taken from freshly killed specimens:—

	Length.	Wing.	Tail.	Tarsus.	Bill from forehead.
Male,	6·5	3·25	3·	1	0·48
Female,	6·5	3·2	2·75	0·98	0·46

Since returning from Darjiling I have received from Mr. Mandelli an undescribed species of the genus, obtained on the Singalelá range. This I have called *P. saturatus*.

747 *PYRRHOSPIZA PUNICEA*, Hodg.—A single male of this large finch was shot by me at about 14,000 feet elevation on the Chola range, on a grassy hill side, with scattered bushes, and in the neighbourhood of rocky crags.

746 *PROCARDUELIS NIPALENSIS*, Hodg.—I saw this bird once or twice on the Chola range at about 13,000 to 14,000 feet elevation, and a specimen was, I think, shot by Captain Elwes. It was seen on open grassy ground with scattered rocks and scrub rhododendron.

750 *CHRYSOMITRIS SPINOIDES*, (Vigors).—Common in small flocks up to about 9,000 feet locally in the Láchung valley, keeping to clearings or grassy hill sides. I did not notice the Siskin either on the Chola range or at high elevations in Northern Sikkim. It probably breeds at moderate altitudes. I found flocks early in September as low as 7,000 feet, at Kedam, between Chúnghám and Láchung.

753 *FRINGILLAUDA NEMORICOLA*, Hodg.—Elwes obtained one specimen which, I believe, belonged to this species, at the Tankra pass. I did not meet with the bird myself, nor have I compared Elwes's specimen since returning, but this bird has been frequently obtained in Sikkim before. (Blyth, Ibis, 1867, p. 45).

LEUCOSTICTE HEMATOPYGIA, Gould.—I only met with this bird within a mile or two of Kangra Lama pass, at an elevation exceeding 15,000 feet. There it was abundant in flocks of 15 or 20. It has a rather swift flight, and from the nature of the country it inhabits, in autumn at all events, must always settle on the ground or on rocks.

In none of my specimens are the pink edges to the feathers of the rump much developed, and in some, doubtless young birds, they are entirely wanting; the distinction is not sexual, for I have more than one female in which they are fairly developed. The head too is much paler in colour than in Gould's figure in the Birds of Asia; some specimens have the head feathers dark at the base with broad brown margins, which would doubtless wear off in the spring as in *Euspiza melanocephala*. The iris is brown; bill black, except at the base of the lower mandible, where it is greenish; legs black. Dimensions taken on fresh specimens.

	Length.	Wing.	Tail.	Tarsus.	Bill from forehead.
Male,.....	7	4·6	3·1	0·85	0·45 inch.
Female,.....	7	4·3	3·1	0·85	0·42 „

MONTIFRINGILLA RUFICOLLIS, *sp. nov.* *Mus capite dorsoque pallidescente brunneis, hoc late fuscescente striato; fronte albescente, uropygio rufescente; superciliis, genis, mento et gula media albis; loris, linea infraoculari, (postice supra regionem auricularem producta et brunnescente.) et striis duobus gularibus, una utrinque ab mandibula producta, postice divergentibus, nigris; regione auriculari et colli lateribus ferrugineis, spatio parvo albo subtilius ad*

gulam interveniente; remigibus brunneis, extus, primo excepto, fulvo-, intus albo marginatis; primi pogonio externo et pennarum singularum, præter primas et tres ultimas, maculis magnis basin versus pogoniorum internorum albis; tectricibus alarum minoribus plerumque albis; angulo alæ grisescente; supracaudalibus fulvis elongatis, rectricibus mediis fusco brunneis, fulvo marginatis, cæteris basin versus pallide cinereis, postice et ad margines albescentibus, terminationibus semipollicaribus cum rectricibus mediis concoloribus; pectore abdomineque albis, vix fulvo tinctis; iridibus rufescenti-brunneis, rostro pedibusque nigris. Long. tota 6, long. alæ 3·75, caudæ 2·35, tarsi 0·82, rostri a fronte 0·42, poll. (Angl.).

Femina fronte albescente et uropygio rufescente; torque collari subtus haud interrupto, postice brunneo. Habitat in Tibet.

Male. Forehead whitish passing into the rather pale umber brown of the head; supercilia white; lores and a line from them passing under the eye black, this line is continued posteriorly over the ear coverts, and its colour changes to dark ferruginous; back umber brown with broad central dusky streaks to the feathers, rump more ferruginous; wings brown, the first primary with the outer web white, the others with fulvous outer margins, all with white internal edges, and a broad white wing band, only visible on the expanded wing, formed by a large spot on the inner webs of all the primaries except the first four, and the whole basal portion of the inner web of the remaining quills except the last three, which have broad fulvous borders; smaller wing coverts mostly white, angle of the wing greyish. Upper tail coverts very long, pale umber with a fulvous tinge; central tail feathers and the tips of the remainder for about half an inch dark brown with fulvous margins, basal portion of all the tail feathers except the central pair pale ashy with some white on both inner and outer webs between the grey portion and the brown tips, increasing in quantity on the outer feathers, and running up the external web which is entirely white in the outermost pair. Sides of the head below the black eye streak, chin and throat white, with two black lines, one from each side of the base of the lower mandible, running backwards and diverging; ear coverts bright ferruginous, sides of the neck the same, but a little paler, the rufous tint forming a demi-collar, only interrupted for a very narrow space in front; remainder of the lower parts white with an isabelline tinge. Iris reddish brown, bill and legs black.

The female wants the whitish forehead and the rufescent tinge on the rump; the demi-collar is brown posteriorly, and, in the only specimen obtained, it is continuous round the front of the neck.

The dimensions given above were taken from a male before skinning. The following are taken from two other skins, a male and a female.

	Wing.	Tail.	Tarsus.	Hind claw.	Bill from forehead.	Bill from gape.
Male,	3·63	2·23	0·85	0·36	0·42	0·53
Female,	3·56	2·1	0·87	0·32	0·43	0·54

This bird differs widely from every described form. In structure it is closely allied to *M. nivalis*, and differs from *Leucosticte* in its shorter wings and tail. The plumage may become whiter in the winter.

I met with one flock of this new finch near Kangra Lama pass, and with another at Phálung, both places inhabited by purely Tibetan forms, and at elevations of 15,000 to 16,000 feet. It is probably common in Tibet. Dr. Stoliczka is of opinion that it is the same as the undescribed *Montifringilla* found by him in Ladak (J. A. S. B., 1868, pt. II, p. 62), but of which his specimen is not now in Calcutta.

Corvidæ.

657 *CORVUS CORAX*, L. (*C. Tibetanus*, Hodg.).—I give the measurements of four birds taken before skinning. They do not exceed those given by H. von Pelzeln (Ibis, 1868, p. 316,) from Dr. Stoliczka's notes, so that it is improbable that the Eastern race is really distinct. Mr. Blyth appears to consider the Tibetan bird identical with the European, (Ibis, 1870, p. 169, note,) and I learn from Captain Elwes that Dr. Jerdon is of the same opinion, indeed he placed *C. Tibetanus* amongst the doubtful species in his Appendix.

	1.	2.	3.	4.
	Male.	Female.	Sex not ascertained.	
Length,.....	27·	25·5	25·75	25·5
Wing,	19·25	19·	18·75	19·
Tail,	11·5*	10·75	11·	11·
Tarsus,	3·	2·4†	2·75	2·75
Length of bill from gape,.....	3·25	2·85†	3·	3·
Height of ditto,	1·3	1·1†	1·25	1·25

The wings when closed just reach the end of the tail which is very distinctly wedge-shaped. Iris very dark brown.

Ravens were not seen much below 14,000 feet, but above that elevation they were common both on the Chola range and in Northern Sikkim.

660 *CORVUS VAILLANTI*,‡ L. ss. (*C. culminatus*, Sykes).—Some specimens from Northern Sikkim are so much larger than any from the plains of India that I am strongly disposed to think them distinct, but other specimens from the same locality are no larger than those from Calcutta.

There is considerable variation in the size of this species in India, as the following series of measurements will shew :—

* In the dried specimen the tail measures only 19·5, and the height of the bill is 1·15, tarsus 2·7.

† These measurements are from the dried skin.

‡ Lord Warden in the Ibis, 1868, p. 165, note, has pointed out that Lesson's name *C. Levaillantii* (potius *Vaillanti*) has priority over Sykes's.

	Wing.	Tail.	Tarsus.	Bill from gape.
♂ Calcutta (in Indian Museum,).....	11·6	6·75	2·17	2·45
♀ Ditto ditto,.....	12·	8·	2·35	2·5
♀ Ditto ditto,	12·5	7·5	2·28	2·5
♂ Godavari valley,.....	12·5	7·25	2·05	2·3
♀ Ditto,	11·6	6·75	2·1	2·3.

Whilst two specimens shot at Láchúng had the following dimensions : --

	Wing.	Tail.	Tarsus.	Bill from gape.	Whole length.
1,	14·25	9·5	2·4	2·35	21·75
2,	13·25	8·75	2·4	2·35	20·

Neither of these had completed its moult, but probably the longest quills and tail feathers are full grown. A specimen obtained by Dr. Stoliczka in Western Tibet measures

Wing.	Tail.	Tarsus.	Bill from forehead.
13·5	9	2·4	2·45

And in all the bill, although not longer from the gape, is stouter and higher, and the gonys appears longer. But on the other hand a specimen brought by Captain Elwes from Láchúng has the wing only 12·2, tail 8 inches, whilst a specimen from the Chola range has the same measurement precisely. The sexes are unfortunately not recorded on my specimens.

Under all the circumstances I do not like to propose a new name, but it is quite possible that the Himalayan form is larger than that found in the plains of India. The dimensions given by Jerdon for *C. culminatus* : length 21 inch, wing 13½, tail 7½, equal those of Himalayan specimens. This variability in size probably explains the difference of opinion between Mr. Blyth. (Ibis, 1868, p. 132,) and Captain Beavan with Colonel Tytler (Ibis, 1867, p. 328), as to the distinction, or otherwise, of the Andaman crow. Specimens of *C. Vaillantii* from Malacca precisely resemble those from Bengal.

Crows were common up to about 13,000 feet, above which elevation they seemed to be replaced by ravens. They appeared far more abundant about 8,000 feet in the higher valleys than below that elevation ; there were large flocks of them near most of the villages, but, as usual with *C. Vaillantii*, not about houses like the Indian *C. splendens*.

666 NUCIFRAGA HEMISPILA, Vigors.—This is rare on the outer ranges of Sikkim, but common in the pine forests of the interior. It is not a very wary bird, but is usually to be seen on the edges of open glades or on trees outside the forest. Its cry and flight are both decidedly corvine. I once saw a pair hawking after butterflies just as crows may sometimes be observed to do ; the white of the outer tail feathers becomes very conspicuous when the birds are thus engaged. The iris is dark brown.

679 FREGILA GRACULUS, L., *F. Himalayanus*, Gould.—Von Pelzeln has pointed out (Jour. f. Ornith. for 1868, and Ibis, 1868, p. 317), that

there is no constant difference in size between the Western Himalayan choughs and *F. graculus*. But my specimens from Sikkim with one exception, a female and probably a young bird, somewhat exceed the dimensions given by v. Pelzeln.*

	Wing.	Tail.	Tarsus.	Bill from gape.
Male from Sikkim,.....	12·75	6·5	2·4	2·3
Three females, ditto,.....	11·5 to 12·3	5·8 to 6·8	2·2 to 2·35	2· to 2·3
Male from Switzerland, v. Pelzeln,	12·17	5·52	2·07	2·41

I have unfortunately only one male specimen. In the smallest specimen brought down by me the wing does not exceed eleven inches.

The red-billed chough is rather scarce on the Chola range. I only saw it once at about 13,000 feet elevation. In Northern Sikkim it abounded from about 9,000 to 16,000 feet; at Momay Samdong there were many about the houses, as noticed by Hooker, and at first they were not wary, but a few shots soon made them wild. They are usually seen about places where yaks have been herded, hunting for insects under the dung, but they also feed on berries and seeds. The iris is brown.

680 *F. PYRRHOCORAX*, (L.) Dr. Stoliczka found the yellow-billed chough common in Western Tibet, whilst the red-billed bird was comparatively scarce. In Northern Sikkim precisely the reverse is the case. The red-billed chough abounds, whilst the Alpine chough was only seen once. I found a flock, five or six miles, below Kongra Lama in the Lachen valley at a little below 15,000 feet, and at a place where the fauna was principally Tibetan, and I shot one bird which measured: length 16 inches, wing 11·25, tail 7·5, tarsus 1·75, bill from forehead 1·1. The iris is brown, bill yellow, feet red. The crop contained small black berries. I fail to see the necessity for placing the two choughs in distinct genera.

Garrulus bispeenaris was not seen during the journey, although Captain Elwes obtained a specimen from, I believe, the Singalela range. *Urocissa flavirostris* I saw at Lachung frequently, but not above 8,000 feet.

Order—COLUMBÆ.

Columbide.

783 *ALSOCOMUS HONGSONI*, (Vigors).—Captain Elwes shot this wood pigeon at about 13,000 feet elevation near the Tankra-k. I did not meet with it.

790 *COLUMBA LEUCONOTA*, Vigors.—Locally distributed throughout the higher ranges of Sikkim, very common in places, rare in others. This is of course the pigeon to which Hooker refers as almost the only animal food he could obtain at this place (*Him. Jour.* II, p. 72).

* Von Pelzeln's measurements are, I presume, in Vienna inches and lines; these I have, for the sake of comparison, converted into English inches. If his measurements are in Paris inches and lines, they would be rather more.

I never noticed this pigeon above about 13,000 feet. Its habits and flight are very similar to those of the common rock pigeon.

Order—GALLINÆ.

Pteroclidæ.

SYRRHAPTES TIBETANUS, Gould.—This fine sand-grouse does not occur in Sikkim, but it appears to be found just north of the frontier in Eastern Tibet, and four live birds were presented to us by the Governor of Kambajong. They differed from Gould's figure in the *Birds of Asia* in having the ferruginous gorget extending completely round the back of the neck, although narrower behind than at the sides.

In captivity these birds were rather noisy, their double cry being frequently uttered. I succeeded in bringing two to Calcutta alive, but they only survived a few days, although apparently in health when they reached the plains.

Phasianidæ.

804 *LOPHOPHORUS IMPEYANUS*, (Latham).—The monal is not a common bird in Sikkim, it is, however, found throughout the higher parts of the country at a higher elevation than any other species. In September I occasionally saw birds as high as 14,000 and 15,000 feet, above the level of forest. They are very wary, and keep much to the rhododendron scrub which usually covers the sides of the valleys for some distance above the limits of the pine trees; I have occasionally seen them feeding in the open towards evening.

805 *CERIORNIS SATYRA*, (L.)—The horned pheasant is always called Monal by the Ghorkas and other Hindustani speaking people of Sikkim. It inhabits a lower zone than the true Monal, but I never saw it below 8,000 feet in Northern Sikkim. In winter it may descend lower. It appeared to me to be decidedly scarce in the Láchén and Láchúng valleys; far more so than it is on the higher hills around Darjiling, or than we found it to be on the Cholé range.

807 *ITHAGENIS CRUENTUS*, (Hardwicke).—Not rare on the Cholé range, but more common in the pine forests of the Láchúng valley. I shot it only in the latter, in September, in flocks of 10 to 15 birds, males and females in about equal proportions, and the young birds of the year in the same plumage as the old ones, but easily distinguished by the absence of spurs on their legs. The old birds had recently moulted and their tails were not full grown.

All that I saw were in the pine forests around Yeomatong, where they were tolerably abundant. They rarely take flight even when fired at, but run away and often take refuge on branches of trees. I have shot five or six out of one flock by following them up; they usually escape up hill,

and if, as frequently takes place, the flock has been scattered, after a few minutes they commence calling with a peculiar long cry, something like the squeal of a kite. The only other note I heard was a sharp monosyllabic note of alarm; I have heard a bird utter this when sitting on a branch within twenty yards of me.

In their crops I found small fruits, leaves, seeds, and in one instance what appeared to be the spore cases of a moss; there were no leaves or berries of juniper, and the birds were excellent eating. We did not notice the unpleasant flavour mentioned by Hooker, probably because better food is abundant at the season when we shot our birds, and they consequently do not then feed upon pine or juniper.

Tetraonidæ.

817 LERVA NIVICOLA, Hodgs.—I found the snow partridge abundant on the bare slopes of the hills near Yeomatong, at elevations above the limit of bushes. Their habits are admirably described by "Mountaineer" as quoted by Jerdon. They appear to be local in Sikkim. I only saw them at one other locality, near Tangu, and Captain Elwes came across some near the Tankra-lá. They are excellent eating, and by no means tough, if kept for a few days.

TETRAOGALLUS TIBETANUS? Gould.—A species of *Tetraogallus* was shot by Captain Chamer at Phálung; of one specimen he brought the skin to Darjiling, and gave it to Captain Elwes, who considered it to be the above species. I did not examine it, but the identification is probably correct, since the fauna of Phálung is quite Tibetan.

The birds seen by Major J. L. Sherwill south of Kinchinjanga, and which he thought were probably *Tetraogallus Himalayensis* (J. A. S. B., 1863, p. 468.) could scarcely have been that species, as he says they closely resembled Ptarmigan; and the snow cock is so much larger than Ptarmigan that no one who had ever seen the latter could have thought the former resembled it. In all probability the birds seen by Major Sherwill were *Lerva nivicola*.

Order—GRALLÆ.

Scelopacida.

879 IBIDORHYNCHUS STRUTHERSI, Vigors.—We met with several of these birds around Yeomatong. Apparently these were one or two families which had bred in this broad portion of the Líchúng valley. They were, for the most part, solitary or in pairs, keeping in the gravel flats or on the turf beside the stream, and rather wary. I found remains of insects, apparently coleoptera, in their stomachs.

The paucity of both waders and ducks in the higher regions of Sikkim, is remarkable. I once saw a snipe at Momay Samdong, which looked larger

than usual, and may have been *Gallinago solitaria*. It appears probable that the majority of the migratory birds which are found in winter on the plains of India pass from Tibet to Hindustan without halting in the Himalayas. The absence of herons and moorhens is surprising.

Order.—ANSERES.

954 CASARCA RUTILA, (Pallas).—A pair were seen on the lake Bidan, near the Jelep-lá in the Cholá range, and one was shot by Capt. Elwes.



NOTES ON THE ORNITHOLOGY OF CASHMIR,—by W. E. BROOKS, C. E.
Etawah.

[Received 1st September, 1871.]

A few short notes on some of the birds I met with in Cashmir, last May and June [1871], will probably interest some of the readers of the Asiatic Society's Journal. The first requiring notice is—

POLIO ETUS HUMILIS, (Schlegel and Müller).—I procured one on the banks of the Tawi river. I also have one from Dhurnsala. A third specimen was killed near Etawah. The measurements of my birds accord with those given by Mr. Wallace in his article in the Ibis for January 1868, "on the Raptorial Birds of the Malay Archipelago." All three specimens have a dark terminal tail band. This was overlooked by Dr. Jerdon who has named this bird *P. plumbeus*, Hodgson; this and *P. humilis* are identical.

ACCIPITER VIRGATUS breeds up the Seind valley. The eggs are boldly blotched, like those of *A. nisus*. The eggs of *M. badius* are plain bluish white without spots.

BUTEO DESERTORUM.—I procured one at Gulmurg. This is the "*Buteo vulgaris*" of Dr. Jerdon's Birds of India. *B. vulgaris* does not occur in India. *Milvus major*, Hume, is the common kite of Cashmir. It may always be distinguished from *M. Govinda* by the large amount of white on the lower surface of the wing. How this bird differs from *Milvus melanotis*, Temm. and Schl., is a question I should like to see answered.

I took the eggs of the Cashmir kite which resemble those of *M. Govinda*, but are rather larger. The eggs are laid in the latter end of April.

MEROPS APIASTER is common in Cashmir and breeds there.

CORACIAS GARRULA is still more common. It nests in holes in trees and in river and other banks.

CORACIAS INDICA.—Only found in the lower ranges south of the Ruttun Pir Mountain; in fact for the first twenty or thirty miles beyond the Panjab frontier.

ALCEDO BENGALENSIS.—Excessively abundant in Cashmir and breeding there very freely.

YUNX TORQUILLA.—Not unfrequent. Breeds in the large orchard at Ramú.

CERTHIA HODGSONI, n. sp.

The Cashmir creeper is closely affined to *C. familiaris*, but differs in the following respects:—

1. A much longer bill, which is also much lighter coloured.
2. Not nearly so rufous in tone, especially as regards rump and upper tail coverts.
3. The spots on the head and back are very white, and the brown of the upper surface, especially that of the head, is almost black. This gives the Cashmir species a general grey tone, as opposed to the rufous or fulvous tone of the European bird.

4. The English bird has the *three* outer primaries (including the diminutive first) plain brown; and the *fourth* is marked with a buff patch on the outer web. In the Cashmir bird there are *four* plain primaries, and the *fifth* is marked with the buff patch on outer web. On opening the wings of the two birds, it will be found that the arrangement of the buff and brown of the quill feathers generally differs in position and extent. I have no hesitation whatever in separating the Cashmir species. It has also a lighter coloured bill and lighter feet and claws. It is found sparingly in the pine woods near the snows. It was seen at Gulmurg and also at Sonamurg, where Captain Cock took a few nests. The egg is much more densely spotted than that of the English creeper, so as almost to hide the reddish white ground colour. Size 0.59 to 0.65 long, by 0.48 broad; time of laying, the *first* week in June.

I give dimensions of the two species:—

	<i>C. Hodgsoni.</i>		<i>C. familiaris.</i>	
	Male.	Male.	Male.	
Length of skin,	4.8	4.75	4.8	4.85
Wing,	2.54	2.5	2.4	2.42
Tail,	2.5	2.3	2.4	2.4
Bill at front,68	.67	.42	.53
Tarsus,62	.62	.62	.6
Length of foot including claws,	1.25	1.2		

Mr. Blyth, Ibis for January 1867, identifies a Western Himalayan bird with *familiaris*. I think this specimen will prove to be the present species and not *familiaris*. *C. Himalayana* is found on the south side of the Pir Panjal Mountain, but I did not meet with it in Cashmir proper, where it is replaced by *C. Hodgsoni*.

SITTA CASHMIRENSIS, nov. sp.

In colouration very like *S. Himalayana*, but the Cashmir bird is much larger, with the white on the tail differently distributed. The wing measures 3·3 in. The white of the chin, throat and side of the head is not abruptly defined, but shaded gradually into the rufous of the lower parts. It is very like *S. Europæa*, but is distinct. The abdomen, flanks and lower tail coverts are darker than in *S. Himalayana*. There is no white edging to the under tail coverts as in *Europæa* and *cæsia*. I procured this bird in the pine forests of Cashmir.

SITTA LEUCOPSIS.—Captain Cock took the eggs at Sonamurg up the Scind valley. They are like those of *S. Europæa*, but glossier and more delicately marked.

UPUPA EPOPS.—Abundant. I took a nest with ten (!) eggs out of a hollow willow at Ramú. The distinctions pointed out by Dr. Jerdon as separating the plains' species from this one do not hold good. The only certain distinction is the depth of the red colour in the Indian bird, which generally has also a vinous tinge. *U. epops* arrives from the north in great numbers in September and October.

HEMICHELIDON FULIGINOSA, Hodgson. (? *H. Siberica*, Gml.)

Abundant in the pine woods of Cashmir about 7,000 feet elevation where it breeds. It was especially numerous at Gulmurg. This is the species described in detail by Dr. Stoliczka in his notes on the Ornithology of the Sutlej valley.

I think there can be but little doubt that it is the *Muscicapa fuscedula* of Pallas. Dr. Stoliczka informs me that Gray, in his 'Handlist', I, page 324, unites *M. Siberica*, Gml., *M. fuscedula*, Pallas, and *H. fuliginosa*, Hodgson, giving the two latter names as synonyms only. I am not satisfied that our North-West bird is the original *fuliginosa*, described by Hodgson. The measurements, especially of the wing are much larger; and even a young spotted bird I have, has the wing fully three inches in length. I am also not satisfied that Mr. Hodgson had not two species under the same name, for the dimensions on the back of the drawing of the nest of *H. fuliginosa*, give the wing of two specimens as each three inches in length. The tails are each two inches long. Of this species on another drawing Mr. Hodgson says "*H. fuliginosus*. Uniform sooty brown, darkest on alars and caudals and shaded with white on lower belly, vent and under tail coverts. The body below paler than above. Length 4½ inch; bill to gape ½; tail 2; tarsi to sole 1⅞; central toe and nail rather less; closed wing 2¾; legs blackish; bill sooty caraneous." It will be observed that Mr. Hodgson does not mention the whitish patch on the front of the neck, nor the bright rufous on the inner webs of the wing feathers. I have had a good many specimens of the North-West species, and find the wing to range from 2·83 to 3·05; and the tail from 1·9 to 2 inches.

I am very strongly of opinion that there are two species closely allied, both being found in Nepal; the larger one ranging from thence to the extreme West and North, even to Siberia, and the shorter winged one extending eastwards. I am borne out in this conviction by both Dr. Jerdon and Mr. Hume. On Mr. Hume shewing Dr. Jerdon his specimens of *H. fuliginosa*, the latter said they were not *fuliginosa*, and that he did not know the bird! In proof of this statement, Dr. Jerdon after a hunt among his box of skins produced at last a singularly broad billed little sooty fly-catcher, labelled *H. fuliginosa* in Mr. Blyth's handwriting. This bird I saw. It is smaller: agreeing with Hodgson's measurements, and has an entirely different bill; broader and more convex on the outline, as looked upon from above. The bill is so thoroughly different in shape, that it could not be easily confused with the larger bird. I, therefore, conclude that our bird is not the original *fuliginosa*, as described by Mr. Hodgson. The dimensions on the back of the drawing of the nest above referred to, are in native character only; not by Mr. Hodgson himself, and there is no evidence to show that he confused the two birds. If Mr. Gray is correct in his identifications, our North-West bird should probably stand as *H. Siberica*, Gml., being distinct from *H. fuliginosa*, Hodgson.

Captain Cock found a nest of our bird with three eggs at Sonamurg up the Scind river. It was placed against the side of a tree trunk, and the eggs were of a pale greenish ground colour minutely mottled with pale reddish brown, especially towards the larger end; size of eggs .65 by .46 inch.

SIPHIA LEUCOMELANURA.—Not uncommon in Cashmir wherever there are pine woods. As in the case of *Ianthia rufilata*, many pairs of these birds which were breeding had the male in the plumage of the female! Only two pairs which I shot had blue males.

The nest is a neat little cup, placed in a hollow in the side of a tree trunk. The eggs 4 in number are of a pale buff color, clouded with dull pale rufous towards the larger end. Size, .62 by .48 inch.

ERYTHROSTERNA PARVA.—Breeds sparingly in Cashmir at from 6 to 7,000 feet elevation. The males in breeding plumage have the red of the breast bordered on each side by a stripe of velvet black. This is not shewn in Dr. Bree's illustration. In winter the black border disappears, nor is it regained before the birds leave the plains of India in March and April. The song is sweet, loud and Robin-like, but short. I failed to find a nest.

PRATINCOLA INDICA.—The small black Indian species is the stonechat of Cashmir. It is not an abundant bird anywhere, as it is in Kumaon. The first place in Cashmir where I met with it was at Thumna Mundi, south of the Rultun Pir mountain, at about 4,000 feet elevation. Up to this point *Pratincola caprata* is the very abundant stonechat; extending through all the lower ranges, but not beyond Thumna Mundi, nor did I see it at all

beyond the Pir Panjal range. In Cashmir proper, the only stonechat I observed was *P. Indica*, which extends up to the Seind valley nearly as far as Goond.

LANTHIA RUFILATA.—This bird, like *Siphia leucomelanura*, breeds in the immature or female dress. I shot several pairs which were nesting, and saw others. Only one pair had the male mature, and differing from the female. It nests in holes in bank sides, under tree roots, or fallen tree trunks. The eggs, 4 in number, are bluish white, very faintly marked towards the larger end with the palest reddish brown. Those markings can only be seen upon a close inspection. Length 7.4 by .56 inch.

CALLIOPE PECTORALIS. Found beyond the Pir Panjal pass, frequenting large beds of broken rock on the grassy hill sides, where they breed. The song is pretty and rather *Accentor*-like.

ACROCEPHALUS BRUNNESCENS. Breeds abundantly in the Cashmir lakes. The nest is supported, about 18 inches above the water, by three or four reeds; and is a deep cup, composed of grasses and fibres. The eggs are four; very like those of *A. turdoides*, but the markings are more plentiful, and smaller.

ACROCEPHALUS DUMETORUM.—Migrates abundantly through Cis-Himalayan Cashmir in the beginning of May. As I returned in June, I neither heard nor saw one.

ACROCEPHALUS AGRICOLUS.—Near Shupiyon I found a finished empty nest of this truly aquatic warbler in a rose-bush which was intergrown with rank nettles. This was in the road side where there was a shallow stream of beautifully clear water. On either side of the road were vast tracts of paddy swamp, in which the natives were busily engaged planting the young rice plants. The nest strongly resembled that of *Curruca garrula*. The male with his throat puffed out was singing on the bush, a loud vigorous pretty song like a Lesser White-throat's, but more varied. I shot the strange songster, on which the female flew from the nest. This was the only pair of these interesting birds that I met with. I think, therefore, that their breeding in Cashmir is not a common occurrence.

DUMETICOLA MAJOR, sp. nov.

Similar to *D. affinis*, Hodgson, but much larger; measuring from 6 inches to 6.3 inches; wing 2.28 to 2.3; tail 2.7; bill at front .55; from gape .75 to .8; tarsus .87; mid toe and claw .72; hind toe and claw .6; tail excessively graduated, the outer feathers being 1.12 in. shorter than the central ones. The bill is long and compressed at the sides; generally quite black, but sometimes dark brown with the lower mandible pale, except towards tip. Legs and feet pale flesh colour, with the claws a trifle darker. Irides dark brown; lores whitish. A cream coloured supercilium. Checks

whitish, finely mottled with light brown. Chin, throat and upper breast pure white, finely spotted with dark brown on the breast. These spots are confined to the breast, and in some specimens they are faint or entirely wanting. Centre of belly and abdomen white; sides of breast and flanks shaded with olive brown; under tail coverts pale brown, each feather being broadly bordered with dull white. Whole upper surface dark dull olive brown, the crown of the head being conspicuously the darkest. Primaries, secondaries, and tertials, also wing coverts with the edges of the feathers, rather rufescent. Lining of wing white, with a few small brown markings towards ridge of wing, the tail feathers are obsoletely cross-rayed.

The longer, straighter and stronger bill, and the differently formed wing, with tolerably large 1st primary, separate this bird from true *Locustella*. The upper surface is also devoid of streaks. I obtained several specimens. It ranges from 6,000 feet upwards, even to 10,000 feet elevation, and frequents exclusively places where the ground cover is abundant. It is seldom seen. The song is strictly that of a *Locustella*; similar to that of *L. Rayi*, but slower and louder. By beating the cover where I heard the birds, I was enabled to get an occasional snap shot, and thus secured my specimens. They were all males.

For the sake of comparison, I give Mr. Hodgson's dimensions of 4 specimens of *Dumeticolu affinis* as recorded on the drawing of the bird.

Tip of bill to tip of tail,	5 $\frac{1}{8}$	5 $\frac{1}{8}$	5	5
Bill to gape,	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{8}$
Tail,	2	2 $\frac{1}{4}$	2	2
Closed wing,	2 $\frac{1}{8}$	2 $\frac{3}{16}$	2 $\frac{1}{8}$	2 $\frac{1}{4}$
Tarsus to sole,	$\frac{7}{8}$	$\frac{13}{16}$	$\frac{13}{16}$	$\frac{7}{8}$
Central toe and nail,.....	$\frac{3}{4}$	$\frac{11}{16}$	$\frac{11}{16}$	$\frac{11}{16}$
Hind do. do.,	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{16}$	$\frac{9}{16}$

The bill of the Cashmir bird is nearly one quarter of an inch longer. The tail and total length are also much longer.

HOREITES BRUNNEIFRONS, Hodgson.—Occurs sparingly on the south side of the Pir Panjal pass. My specimens agree very well with Mr. Hodgson's drawing. I heard the song of this bird which is very curious and unmusical. Any description of the strange discordant song would be impossible. It sings in a most energetic impassioned manner, and was so engrossed with its own performance, that it did not mind my approach to within four yards.

HOREITES PALLIDUS, sp. nov.

A larger bird than the last, but of very similar construction. It is found in dense jungle at lower elevations. Its song is a strange prolonged whistle with a sudden turn at the end, the second strain consists of 5 or 6

notes in a different key; after a short silence, the long whistle is begun again. I have heard more than one visitor to Cashmir call this bird "the whistling bird."

The description is as follows: Length 5·15 inch.; wing 2·2; tail 2·2, bill ·33 and ·5 from gape; tarsus ·9; irides hazel brown; bill light brown; lower mandible paler, except the tip; legs, toes and claws light fleshy brown. Whole upper surface dull greyish olive or rather pale olive grey; a slight tawny tinge on the wings and basal half of tail, on the outer webs of the feathers. Lower back and upper tail coverts rather lighter and brighter in tint than the rest of the back; being more of a pale brown with slight tinge of yellow in it. A dull whitish grey supercilium. Pale brown streak through the eye. Cheeks and ear-coverts brownish white, mottled with pale brown. Chin to abdomen greyish white. Sides of breast, flanks, tibial plumes, and lower tail coverts, pale brownish grey; the flanks being slightly tinged with fulvous, and the lower tail coverts still more so; lining of wing creamy white.

This bird has none of the depth of rich colouring of the *Horornis* group. Its mode of coloration is rather like that of *Aerocephalus dumetorum* in faded summer plumage, but paler and lighter. The tarsi, feet and claws are strong and stout. Tail much graduated, the outer feathers being ·42 shorter than the central ones. In the wing the 5th primary is the longest, and a shade longer than the 6th; 4th a little shorter than 6th; 3rd equal to 5th; 2nd very short, and ·48 short of tip of wing. The rictal bristles are distinct and almost ·22 in. long. The bill has a very faint notch at the end like that of *Horeites brunneifrons*.

PHYLLOSCOPUS MAGNIROSTRIS.—Rather common in parts of Cashmir. It frequents rocky banks of mountain rivers, where they are well wooded. Its song is singularly sweet, but very short. I never found its nest owing to the great difficulty of the ground on account of the excessive steepness. It was most abundant up the Chitterpani from Burrungulla to near the top of the Pir Panjal mountain; also along the banks of the Rembiera river between Aliabad serai and Hirpore. I heard a few singing in the woods about Gulmurg. I may here remark that *P. trochilus* does not occur in India, not even in Cashmir, and may be safely expunged from our lists.

PHYLLOSCOPUS TYTLERI, sp. nov.

In plumage resembling *P. viridanus*, but of a richer and deeper olive; it is entirely without the "whitish wing bar" which is always present in *viridanus*, unless in very abraded plumage. The wing is shorter; so is the tail; but the great difference is in the bill, which is much longer, darker and of a more pointed and slender form in *P. Tytleri*. The song and notes are utterly different; so are the localities frequented. *P. viridanus* is an

inhabitant of brushwood ravines, at 9 and 10,000 feet elevation; while *P. Tytleri* is exclusively a pine forest *Phylloscopus*. In the places frequented by *viridanus* it must build on the ground, or very near it; but our new species builds 40 feet up a pine tree a compact half-domed nest on the side of a fir branch. Eggs pure white. Captain Cock took the only nest obtained, shooting the old bird off the nest. Properly speaking, none of the notes of *P. Tytleri* could be called a song, but the song of *P. viridanus* is not at all a bad one, and quite *Phylloscopine*. I give measurements of the new bird, and also of *P. viridanus* for the sake of comparison. Here let me observe that Colonel Tytler is, properly speaking, the discoverer of this interesting *Phylloscopus*; for four years ago he shot one at Simla which, together with one of my own specimens, I have sent to Dr. Tristram for examination. Col. Tytler had labelled the bird *Sibilatrix affinis*; while *Phylloscopus affinis* stood in his Museum as *Asilus affinis*. As most ornithologists do not recognize the generic distinctions of *Sibilatrix* and *Asilus*, and as *Asilus* has been applied to a genus of insects, I have, with Col. Tytler's permission, altered the name of his bird to *Phylloscopus Tytleri*. The only question remaining is, whether it is distinct from the *Phylloscopi* described by the Russian naturalists. Dr. Tristram identifies *P. viridanus* with *P. Schwarzii*, Radde; but it is possible that he may have compared the Russian specimens with some of *P. Tytleri*. The measurements of my specimens are—

P. Tytleri.

		Length.	Wing.	Tail.	Bill at front.	Bill from nostril.	Tarsus.	
No.	1	♂	4.75	2.35	1.75	.34	.33	.76 shot off nest by Capt. Cock.
"	2	♂		2.27	1.67	.38	.33	.76 Col. Tytler's bird.
"	3	♂		2.35	1.83	.35	.3	.75 Kashmir.
"	4	♂		2.3	1.7	.36	.31	.7
"	5	♂		2.2	1.55	.35	.3	.7
"	6	♂		2.4	1.7	.35	.3	.7
"	7	♂		3.27	1.72	.37	.32	.75 Almorah.
"	8	♀		2.32	1.78	.35	.28	.7 Etawah.

Only one specimen was measured in the flesh, No. 1.

P. viridanus.

No. 1	♂	5	2.5	2.00	.3	.27	.8 Kashmir,
"	2		2.55	2.15	.32	.29	.8
"	3		2.45	1.9	.32	.29	.7
"	4		2.57	2.05	.32	.30	.8
"	5		2.47	1.93	.32	.30	.8
"	6		2.55	2.00	.3	.28	.76 Etawah.
"	7		2.45	2.03	.32	.29	.74
"	8		2.36	2.08	.32	.28	.75

Neither Captain Cock nor I found a nest of *P. viridanus*. I searched hard, for I was anxious to ascertain to what extent the nest and eggs differed from those of *P. Tytleri*.

PHYLLOSCOPUS AFFINIS.—frequents the same brushwood ravines as *P. viridanus*. The song is very poor and the call note a sparrow-like chirp. I did not find the nest.

PHYLLOSCOPUS NITIDUS.—I shot one (about 7th May) in the lower ranges, but I never met with either *P. Indicus* or *P. tristis* in Cashmir.

REGULOIDES OCCIPITALIS.—Is perhaps the commonest bird in Cashmir, even more so than *Passer Indicus*. It is a very noisy bird, with a short poor song. I found several nests which were placed in holes under the roots of trees; one nest was inside a decayed stump. The nest is a loose one of moss, lined with a few hairs. Eggs 4 or 5, and pure white, without any spots.

REGULOIDES TROCHILOIDES.—I shot one in the beginning of May on the Pir Panjal mountain. I never met with it again.

REGULOIDES SUPERCILIOSUS.—Is very abundant in Cashmir, and I believe in all hills immediately below the snows. It would be vain to look for this bird at elevations below 8,000 feet, or at any distance from the snows. It was common even in the birch woods above the upper line of pines. I found many nests. It builds a globular nest of coarse grass on a bank side; always on the ground, and never up a tree, as stated by Mr. Hume's native informant; the nest is lined with hair in greater or lesser quantities. The eggs, 4 or 5 in number, average .56 by .44 inch; are pure white, profusely spotted with red, and sometimes have also a few spots of purple grey. On the 15th of June I found a nest with four young ones in the south side of the Pir Panjal pass. This bird has no song; only a double chirp in addition to its call note. The double chirp which is very loud is intended for a song, for the male bird incessantly repeats it, as he feeds from tree to tree near where the female is sitting upon her nest.

REGULOIDES PROREGULUS.—Tolerably abundant in the Cashmir pine woods. It has a short twittering song and also a faint shivering sibilant note, like that of *P. sibilatrix*; so that the song ascribed by Mr. Blyth to *Reguloides superciliosus* belonged to the present bird. In addition to these it has its call note.

Captain Cock took the nest and eggs at Sonamurg. It builds, like the golden-crested *Regulus*, up a fir tree at from 6 to 40 feet elevation, on the outer ends of the branches. The nest is of moss, wool and fibres and profusely lined with feathers. Eggs 4 or 5, pure white, profusely spotted with red, and a few spots of purple grey. Size .53 by .43.

CURRUCIA AFFINIS. Tolerably numerous in Cashmir proper, above the elevation of its plain. The song is loud, full, and sweet. The nest and eggs precisely resemble those of *C. garrula*, which bird, I may observe, has no more right to be included in the Indian list, than *Phylloscopus trochilus*.

MOTACILLA CASHMIRENSIS, sp. nov.

Is quite distinct from *M. Luzoniensis*, Scopoli, with which I compared it. The latter is, as noted by Dr. Jerdon, identical with *M. Hooly-soni*, Blyth, vel *M. alboides*, Hodg. My new bird is coloured very like *M. lugens*, Temm. and Sebletz., except that the chin and throat are black. The black extends down the breast for $2\frac{1}{2}$ inches from base of lower mandible. White portion of face as in *M. personata* of Gould and *M. lugens*; remainder of head and whole of back deep black. All the wing coverts, except a few at upper portion of bend of wing, pure white. All the quills edged with white, the tertials very broadly so; so that when the wing is closed, it looks almost entirely white. I need not notice that the tail is the same as that of all other black and white wagtails. Total length 7.6; wing 3.55; tail 4 inches, bill at front .5; tarsus .97. My bird has a grey back in winter, and some of those shot in May were only partly changed. If Mr. Gould's specimens of *M. personata* were not midsummer ones, my bird may prove to be *M. personata*. It nests in holes under large stones in shingle beds of rivers and in accumulations of drift wood. The eggs are like those of *M. alba*, but slightly larger.

CALOBATES MELANOPE.—Breeds plentifully on the Cashmir streams above 6000 feet elevation. Nest and eggs similar to those of *C. sulphurea*. It is distinguished from the European bird by a very much shorter tail.

BUDYTES CALCARATUS, Hodgson.—Plentiful in the Cashmir marshes. Breeds on ploughed land and in broken banks near streams of running water. I could not find the nest. The female has a dark grey and black mottled back, with a black grey crown to the head; supercilium and lower parts yellow. Some females are more grey and without a shade of black.

The males have velvet black backs.

BUDYTES CITREOLA, Pallas.—Common with the last in the Indian marshes in the cold season, and migrates through Cashmir in May. In June they were entirely gone from Cashmir. This bird never has a black back, but only a crescentic half collar at the back of the lower neck. The back is always grey. The female has not the collar, nor has she a pure yellow head; the top of her head being yellow olive. The supercilium and lower parts yellow, but duller than in the male. She is a smaller bird than the female of the last species.

BUDYTES CINEREOCAPILLA.—Migrates abundantly through Cis-Himalayan Cashmir in the beginning of May. The dimensions of this bird average greater than in *B. flava* and *B. melanocephala*; especially as regards the length of wing. The mature female approaches the male closely in size and brilliancy, which is not the case with the other two species. The mature females of *cinereocapilla* and *flava* are very easily separable both by size and colour; the latter being far from a brilliant bird, which the female

cinereocapilla is. The males of each are notably distinct. All three are abundant in the plains of India in the cold weather. The young grey and white birds of each moult direct into mature *flava*, *cinereocapilla* or *melanocephala*, as the case may be, as my large series shews. The voice of *cinereocapilla* differs from that of the other two, and is rather like the note of *B. citreola*. It comes up to Etawah in full plumage, after the other two have migrated north. It is curious that it was the only one of the three that I met with in Cashmir. I shot numbers every time I fell in with a flight, but never procured either of the other species. These three very marked birds have all been confounded under the name of *flava*, which is simply absurd. My series consists of about 600, shot in every month except June, July and August. *B. flava* can always, whether mature or immature, be separated from either of the others by its broad white supercilium. The young of *cinereocapilla* and *melanocephala* are closely alike. They would be difficult to separate until they change some of the head feathers. The supercilium of *B. flava* is occasionally strongly tinged with sulphur yellow, so are the edges of the wing coverts and the margin of the tertials when newly moulted; but this yellow tint wears off, leaving the supercilium quite white. All three are subject to yellow margins to wing feathers.

PIPASTES ARBOREUS. Migrates abundantly through Cis-Himalayan Cashmir in the end of April and beginning of May. I shot numbers, but never met with a single example of the other very distinct species, *P. maculatus*, which I did not even hear in Cashmir. It has a long drawn sibilant note, never uttered by *P. arboreus*, and its haunts are never strictly arboreal. The general green tinge: the green edgings to the tail: the very pure white on the posterior part of the supercilium, which changes to a deep buff anterior to the eye; and the utterly different mode of striation on the back, separate this bird from *arboreus*. Few people who study the two birds will agree with M. Verreaux that they are one and the same. Mr. Hodgson rightly distinguished them.

ANTHUS ROSASTES, Hodgson, which has been confounded with *A. cervinus*, is common on the upland grassy hills of the Cashmir Himalayas, where it breeds at and above 10,000 feet elevation. I saw the old birds carrying food to their young on the 15th of June. The song of this species is good, and second only to that of *P. arboreus*, as far as a pipit's song goes.*

* Since I wrote the note on *Anthus roseus* I have seen Mr. Swinhoe's paper on the birds of China, from which I make the following extract.

"208. *Anthus cervinus*, Pall., Zoograph. i. p. 511; Ibis, 1870, p. 347; P. Z. S. 1863, p. 273.

Anthus thermophilus, Ibis, 1860, pp. 55, 429; 1861, pp. 36, 411; 1863, p. 311.

Anthus Japonicus, Ibis, 1861, p. 333.

Throughout China, Hainan, Formosa. It is a mistake to identify the European *A. Cecili*, Audouin (= *A. rugularis*, Brehm), with our eastern *A. cervinus*.

STURNUS NITENS, Hume.

The "*Sturnus unicolor*" of Jerdon. This is described in the forthcoming work which includes the ornithology of the Yarkand expedition. It is like *S. unicolor*, but smaller with shorter wing and more beautiful reflections. It is excessively abundant in Cashmir at moderate elevations and in the valley, and breeds in holes of trees, and in river banks. The eggs are like those of *S. vulgaris*, but rather smaller. The latter bird occurs plentifully in the plains of India in the cold weather, and is as profusely spotted as English specimens. The bills vary in length, and are not longer as a rule than those of the British birds. I did not meet with *S. vulgaris* in Cashmir. It appears to migrate more to the west, for it is said to be common in Afghanistan. *S. nitens* also occurs in the plains in the cold season. I have Etawah specimens. They are at that time slightly spotted, but can always be very easily distinguished from *S. vulgaris*.

EMBERIZA CIA, E. STEWARTI and E. FUCATA, all breed in Cashmir. The latter bird has the best song of the three.

HESPERIPHONA ICTERIOIDES. Lays a large egg like a hawfinch. It builds in pine trees.

Corpodacus erythrinus and *Carduelis caniceps* had not laid when I left in June. They are numerous in Cashmir. The former, by dissection, would not lay till late in July, I think.

CHRYSONITRIS SPINOIDES.—Frequent on the south side of the Pir Panjal pass. This bird is not a siskin, but a greenfinch allied to *C. chloris*. It does not possess the merry song of a siskin, nor any siskin like notes. Its song is the characteristic "beez" of a greenfinch. Any one who has heard the song of the English green grosbeak will know what I mean by the "beez." The "beez" of the Indian so-called "Siskin" is, however, far inferior to that of the greenfinch.

METOPONIA PUSILLA.—I saw this bird in flocks at Shupiyon in May. The female as well as the male has a red forehead. They breed late.

FRINGILAUDA NEMORICOLA.—Abundant on the grassy upland slopes of the Pir Panjal mountain. It breeds there, as they were paired and singing. Ours is a smaller bird, with shorter wing, and in summer is easily distinguished by the rosy line of its eyebrow and breast, which in the other are rust-colour, the breast being streaked with black. The streaks on the flanks, too, in the latter are much longer and broader."

From the above note I conclude that there are only two species of red-breasted pipits, and that the following are the synonyms:

- | | | |
|--------------------------------|-----|-------------------------------|
| 1. <i>A. Cecili</i> , Audouin. | } | The European or Western bird. |
| <i>A. rufogularis</i> , Brehm. | | |
| | and | |
| 2. <i>A. cervinus</i> , Pall. | } | The Eastern or Asiatic bird. |
| <i>A. rosaceus</i> , Hodgson. | | |
| <i>A. Japonicus</i> , | | |

in June; but I did not find the nest. Their shrill song consists of one or two monotonous notes, frequently repeated from the top of some rock or stone.

ALAUDA GUTTATA, sp. nov.

Is the common skylark of the Cashmir plains. Larger than *A. gulgula*, with a longer wing and tail; not so rufous, and with a far bolder mode of marking on the breast. At each side of the breast, the spots coalesce and form a couple of dark patches like those of *Calandrella brachydactyla*. This is not the case in *A. gulgula*. The white on the outer tail feathers is also of a clean white, as in *Alauda arvensis*. From the latter it is, however, quite distinct. I have several specimens of *arvensis*. *A. guttata* is, with the exception of the excessively spotted breast, an intermediate bird between *A. arvensis* and *A. gulgula*; with a song, as might be expected, equal to that of either.

Description. Much less rufous than *gulgula* and of a darker and duller brown above. The lower surface is also colder and greyer in tone. Tail much whiter on outer feathers. Breast much more profusely and boldly spotted and with generally a coalition of spots on each side, similar to that of *C. brachydactyla*. Length 6·3 to 6·9; wing 3·7 to 3·9; tail 2·6 to 2·8 inch.

Dr. Jerdon has made great confusion amongst the larks by giving *A. dulcivox*, Hodgs., as a synonym of *A. triborchyacha*, Hodgs. Mr. Hodgson's drawings shew them to be quite distinct. *A. dulcivox* is a very large lark, measuring $7\frac{1}{2}$ inches long; wing $1\frac{1}{2}$; tail $2\frac{1}{3}$. Breast spotted as in *arvensis*. In character it is the only lark which closely approaches *arvensis*. *A. triborchyacha* is, as far as I can ascertain from Mr. Hodgson's beautifully finished drawing, identical with *A. gulgula*; and so is *Alauda orientalis*, vel *leipax* of Hodgson.—Dimensions of *triborchyacha*: Length $6\frac{1}{2}$ and $6\frac{1}{2}$; tail $2\frac{1}{2}$ and $2\frac{3}{8}$. The drawing shews the wing of *triborchyacha* to be $3\frac{1}{4}$ inches, and that of *orientalis* to be not quite $3\frac{1}{4}$ inches which is the range the wing of *gulgula* is subject to. The tails also agree with that of *gulgula*, and the coloring agrees exactly.

I am satisfied that the Cashmir bird is distinct; for independently of size it differs by the peculiarly dark grey hue. There is another large lark found up the Scind valley at Sonamurg, which may turn out to be Hodgson's large species *A. dulcivox*. Capt. Cock took several nests of this bird and the eggs are large and well marked, but I regret to say, he did not bring a specimen of the bird itself.*

* I have since received several specimens of *A. dulcivox* from Amritsar and Nao-shera, collected by Capt. Marshall and Capt. Cock in the cold season. Length 7·5 to 7·7, wing 4·4 to 4·7 inch. It is a finer and larger lark than *arvensis*.

(Note). I have only noticed some of the birds I met with in Cashmir. To have included the whole would have made this paper too long. I should observe in conclusion that *Totanus hypoleucos* breeds plentifully on the Cashmir streams, and *Ilidorkyachus Steuthersii* sparingly. Two ducks breed there *A. boschas* and *Feligula Nigroa*. *Ardeola minuta*, *Ardea cinerea*, *Ngelirorar griseus*, *Sceloporus rusticola*, *Fulica atra*, *Hydrochelidon Indica* and *Orex Bailloni*, all breed in the Cashmir valley.

NOTES ON VARIOUS NEW OR LITTLE KNOWN INDIAN LIZARDS,—
by DR. F. STOLICZKA.

(With Plates II—V.)

[Received and read 6th September, 1871.]

In continuation of my notes on some *Ophidians*,* I have in the present paper placed on record observations respecting different species of Saurian Reptiles. In obtaining materials for this purpose, I have received constant support from Dr. F. Day, (collecting in the N. W. Provinces and Panjāb), from Major Beldone (Sth. India), Mr. Kurz, (Burma), Mr. Wood-Mason, (Bengal and N. W. Provinces), Mr. Mandelli (at Dageeling) and Mr. Martin (at Pankabaree). Numerous specimens, thus brought together from almost all parts of India, have enabled me not only to discriminate several imperfectly known species, but also to prove the identity of several others. As far as it appeared practicable, I have supported my descriptions by drawings of the typical specimens.

To indicate briefly the results:—I have noted at length some variations in different species of *Lacertide*, and have shewn that little reliance can often be placed in the form and number of the anterior head-shields, a character which is occasionally considered by herpetologists† to be of primary importance in the definition of genera. A complete list of all known Indian and Burmese *Hemidactyli* is given and a few new species described. The genera of the Indian ground *Agamidae* require serious revision, and a few notes on this subject will be found embodied in the subsequent pages. The *Charasia dorsalis*, recorded some little time ago by Mr. W. T. Blandford from Central India, proves to be a new species. As regards *Stellio* a conspectus is given of the four Indian species at present known. In the *Scinc* family I have discriminated three Indian *Hinulia*, *H. indica*, *maculata* and *Dussumieri*, and commented upon various species of *Mococa*, *Riopa*, *Euprepes*, &c.

* Jour. A. S. B., vol. XL, 1871, p. 421 &c.

† Comp. Dr. J. E. Gray 'Lizards,' Steindachner, Sitz. Akad. Wien. Math. Nat. Klasse, vol. LXII, 1870, p. 336.

In connexion with the descriptive details, (often necessarily tedious), I have noted the geographical distribution of most of the species, as far as I had been able to obtain reliable information.

Fam. LACERTIDÆ.

From observations which I made on *Tachydromus*, *Ophiops*, and *Acanthodactylus*, I presume that the form, size and number of shields on the antero-superior part of the head, and also partially the nasal shields are unreliable for generic, and often even for specific, distinctions.

TACHYDROMUS SEXLINEATUS (I. R.,* p. 69.)

I have from the low valleys of Sikkim 25 specimens which I believe to be Daudin's *T. sexlineatus*; they certainly belong to the same species which occurs in Assam and in Burma, those from the latter province having also been referred to the above named species by Dr. Günther; and another specimen of the same species was noted by Blyth from Mergui. (Journ. A. S. B., 1855, xxix, p. 716).

The Sikkim specimens present, however, certain variations which deserve special notice, because they are important as regards comparison with allied forms. The two nasals generally form a distinct suture between rostral and anterior frontal, rarely do these four shields meet in one point. In one specimen the anterior frontal is regularly divided into two shields. The nasal is followed at the hinder inferior edge by a triangular shield, which rests on the posterior upper half of the first upper labial. In two specimens the anterior corner, and in one the upper corner is detached from the inferior postnasal and forms a separate little shield by itself. One specimen has on one side 3, on the other 4 chin-shields, and four specimens have regularly 4 pairs of chin-shields, the two first pairs representing in size exactly, or very nearly, the first pair of such specimens as have only 3 pairs of chin-shields.

There are always 8 longitudinal rows of enlarged scales on the upper side of the neck, separated from the occipitals by only a few smaller scales. Of those 8 rows the outermost on each side has the smallest scales and, although it can generally be traced at the side of the body, it always remains indistinct, somewhat irregular and is occasionally broken up, and the scales never enlarge in size. The other six rows are well marked on the neck and have most probably given rise to the specific name *sexlineatus*. The outer row on each side becomes somewhat obsolete before it reaches the shoulder, while the remaining four rows of enlarged scales continue on the body, and down to the tip of the tail. To these four rows Daudin's name *quadri-lineatus* evidently applies.

* The reference 'I. R.' stands for Dr. Günther's 'Reptiles of British India.'

On the lower side of the body I find constantly only six longitudinal rows of scales on the chest between the axils, one ridge connects the axil with the groin at the edge of the belly and above this follow always two, only in very old specimens sometimes three, shorter rows of enlarged keeled scales. Thus there are on the lower half of the circumference of the body, strictly speaking, 12 series of longitudinal rows of enlarged scales, 6 on the lower side of the belly and 3 (rarely 4) on each side of it. Dum. and Bibron correctly refer to the "six series longitudinales" along the lower side of the belly, and besides to the enlarged scales on the flanks, not, however, defining their exact number, most likely because they found them to be variable. Dum. and Bibron's statement cannot, therefore, be attributed to a probable misprint, as suggested by Dr. Günther (l. cit., p. 69).

The coloration and size and proportions of the Sikkim specimens exactly correspond with those of *seclineatus*. Some have a white iridescent stripe along the edge of the back; others are uniform green above, with a more or less distinct bronze tint. The fore-limb reaches to the rostral and the hind-limb nearly, or exactly to the axil, when laid forward. Of all the specimens examined, there is only one with two inguinal pores on each side, several have 3, but most 4 or 5 pairs, often succeeded by a sixth imperfectly developed one.

What follows from these observations is :

1st.—That the *Tachydromi* cannot be grouped with sufficient reliance, either by the number of chin-shields, or by the number of inguinal pores, as suggested by Dr. Günther, these two characters being evidently very variable within the limits of one species; and that the most important difference must rest in the number and size of the scales of the body, the proportions of the limbs and the general form.

2nd.—That the specific distinction between *T. meridionalis* and *seclineatus* is not so definite, as it would appear to be from Günther's description of the former species. Both appear to have an indistinct short fold before the shoulder, when adult, but in *meridionalis* there are said to be 2 or 3 more transverse rows of scales between axil and groin, and the limbs would seem to be slightly shorter. Whether these points represent sufficiently characteristic distinctions, can only be shewn by the examination of a larger number of specimens.

3rd.—That *T. Haughtonianus* (Jerdon, Proc. A. Soc. B., Feb. 1870, p. 72) must range with Günther's *septentrionalis* (and not with *T. Japonicus*), and as the number of chin-shields is not characteristic, the two are evidently closely allied, but in the former the median row of dorsal scales is not smaller than the lateral ones; the fore limb does not reach the rostral shield, when laid forward, nor the hind-limb the axil.

OPHIOPS JERDONI, Blyth.

Blyth in Journ. Asiat. Soc. Bengal, 1853, vol. xxii, p. 653. —Günther I. R., p. 72.

Tropidosaurus Jerdoni apud Theobald, Cat. Rept. Asiat. Soc., 1868, p. 22.

Pseudophiops Jerdoni et Theobaldi,* Jerdon in Proc. A. S. B., Feb. 1870, p. 71 &c.

I have lately received from the neighbourhood of Agra and the country northwards, towards Ambala, about 20 specimens of the form described by Jerdon as *Pseudophiops Theobaldi*. The characters given as distinctive from the only type of *Ophiops Jerdoni* are not constant; therefore, *O. Theobaldi* must be considered as identical with *Jerdoni*, as has already been suggested by Major Beddome (Madras J. Med. Sc., for 1870). Moreover, the genus *Pseudophiops* proves to be perfectly identical with *Ophiops*. Already in the somewhat injured type of *Ophiops Jerdoni* in the Museum there is on one side a distinct groove seen to proceed from behind the nostril and dividing the nasal. In one of Jerdon's specimens of *Theobaldi*, presented to the Indian Museum, the nasal is, as far as it can be traced, in one shield, but in the other it is distinctly between two shields, followed by two postnasals, which is also the usual number in the type of the genus, *Ophiops elegans*, while three postnasals are evidently of much rarer occurrence. In nearly all the specimens which I lately received, the nasal is exactly as in *O. elegans*, between two shields, only few have them anteriorly, and others also posteriorly, entire; therefore the name *Pseudophiops* must be cancelled.

As regards the species, *O. Jerdoni*, I have to record the following variations. As a rule there is one frontal; in one specimen this is obliquely divided into two unequal shields, and in two specimens it is divided regularly along the middle into two halves. The posterior frontals are sometimes in contact with each other, or they are divided by one elongated, linear shield, or by two smaller ones following each other. Each posterior frontal is behind separated from the respective supraorbital by a small shield, but occasionally the latter is united with the frontal. The elongated vertical, the two large supraorbitals, the pair of anterior occipitals forming a suture, and the larger posterior occipitals separated by two unequal shields, following each other, are persistent in all. There are 8 upper and 7 lower labials, the last in each case smallest, and there are 5 or 6 pairs of chin-shields, the last generally followed by two smaller shields. In one specimen the two, rather larger, anterior pairs are in contact, in others, three anterior pairs form a suture. The number of scales round the body is generally 30, sometimes 32, very rarely 34, of these the 6 ventral longitudinal rows are enlarged and smooth, as are also one or two adjoining rows on either side, while all the other scales are very sharply keeled. The fore-leg, when laid forward, very

* Beddome notes the M. S. name *Cicittata*, which was evidently suppressed by Dr. Jerdon himself. Comp. Beddome in Mad. Jour. Med. Sc. for 1870.

nearly or exactly reaches the nostril, and the hind limb extends to somewhat beyond the axil, rarely as far as the ear. Some of the largest specimens measure very nearly 5 inches, the body being $1\frac{1}{2}$ inch.

The coloration also is variable; it is usually bronze brown, sometimes with an olive and often a greenish metallic tint. The four white bands, two along the edge of the back and two at the sides, are generally well marked; however, in some specimens the dorso-lateral bands are very indistinct. Again, there are as a rule two series of black dots, separated by reddish brown ones, on the back along each white band, and similar black spots, almost forming irregular bars, are at the sides between the white bands, and also below the lateral band. In two specimens all these black spots are remarkably small, and in one of a distinct greenish brown coloration they are nearly absent, but the white bands are well marked. This specimen is one of the two which I noticed as possessing a pair of anterior frontals, and very closely corresponds with *Ophiops Beddomei*, Jerdon* (= *monticola* apud Beddome, Mad. Jour. Med. Sc. for 1870).

I collected near Kandala, on the Western Ghâts, a specimen which agrees in every point with Beddome's description of *monticola*. It has the uniform greenish brown coloration with the dorso-lateral white stripes very indistinct, but the lateral ones well defined; there is a pair of anterior frontals present, and the femoral pores are more widely separated in the preanal region, than in any of the specimens of true *O. Jerdoni* which I examined. Considering the variations which I have noticed in undoubtedly identical specimens of *O. Jerdoni*, I cannot but doubt that *O. Beddomei* (= *monticola*) will prove a really good species. However, more specimens must yet be examined, in order to settle this point.

GAMNOPS MICROLEPIS, Blanford.

Blanford, Jour. Asiat. Soc. B., 1870, xxxix, p. 351, pl. xv, figs. 1—5.

A few specimens of this species, which was described from a single specimen from the Central Provinces, were collected by me at the coal mines of Kurlhurbali, W. Bengal.† One specimen has 5, the other 6, pairs of chin-shields, the last pair in each case followed by a smaller shield. In other respects of structure of shields and scales, proportions of body and coloration the specimens perfectly agree with Blanford's description, except that the number of scales in one transverse row between the 6 longitudinal enlarged rows on the belly, and counted across the back, is generally 56-61 instead of about 50; but this is evidently a character which may be expected to vary with the size of the lizard. There is a good deal of variation in the number and distinctness of the dark spots accompanying the white bands; in some specimens the former nearly become obsolete. The tail is reddish in young specimens,

* Jerdon, in Proc. Asiat. Soc., Feb. 1870, p. 72.

† I found it since abundant in Katch.

and the lower side of adults often with a distinct yellow tinge, particularly on the lower side of the thighs. One of the largest specimens measures $5\frac{1}{4}$, another $5\frac{1}{2}$ inches.

Gymnops is distinguished from all known species of *Ophiops* by the peculiar small size of smooth scales, being almost granular on the neck; they altogether resemble those of *Eremias*. It further differs from *Ophiops* by having one instead of two postnasals, this is, however, a character not of great generic value, as already observed by Mr. Blanford, when suggesting the separation of the present species into a special genus or subgenus.

ACANTHODACTYLUS CANTORIS (I. R., p. 73).

I received numerous specimens of this species from the neighbourhood of Agra, Ambala and Lúdiana, together with *Ophiops Jerdoni*, both of which have also been found associated by Dr. Jerdon (Proc. A. S. B., Feb. 1870, p. 71) in the country a little westward in the Panjáb.

The specimens measure between 4 and 9 inches, the length of the body being $1\frac{1}{2}$ to $2\frac{3}{4}$ inch. When young they are usually marked with 8 longitudinal black stripes, separated by white ones of equal width. Four of these stripes are on the upper side of the body, the two inner coalescing into one before they reach the middle of the back, while the two outer unite on the anterior part of the tail. One dark band runs on the upper edge of the sides of the body, and one connects the ear with the groin. In more adult specimens the dark bands become gradually less distinct and are first dissolved into spots, until they gradually quite disappear; and the same is more or less the case with the white bands and other spots. The general colour changes from brownish to pearly grey, and there is always a more or less distinct purplish iridescent lustre traceable on the scales. This is particularly clearly seen in the more uniform coloured adult specimens, which often shew an indistinct reticulation of a dull reddish tinge on the upper side of the neck and back. Limbs above white spotted, top and sides of head dark spotted or marbled; the dark spots disappearing with age; below uniform white or greenish white. I have to note three points in which nearly all the specimens I examined differ from the type described by Dr. Günther:—

1st.—There are always 3 or 4 scales at the front edge of the opening of the ear, slightly projecting into its space, unless the edge be accidentally turned inwards.

2nd.—There are very often 14 longitudinal, along the median dorsal line convergent, rows of enlarged, keeled scales across the middle of the back, and the adjoining 2 or 3 rows on either side are equally large, but beyond this the size considerably diminishes. Across the middle of the belly there are 14-16 enlarged smooth scales, 10 being in a row on the flat lower surface of the belly, and the remainder at the side of it.

3rd.—The fore limb, when laid forward, at least reaches the nasal shield and more often the tip of the snout;* and the hind limb extends rarely only to the collar, usually somewhat beyond it, and occasionally as far as the tympanum.

None of these points indicate, I believe, a specific distinction from typical *A. Cantoris*, as described by Günther. Some of my specimens agree in every point of size with the measurements given by Günther; the largest is 9 inches.

Of other variations may be noted:—the anterior frontal is, as a rule, single, sometimes split into two unequal portions, and in one instance it is represented by a regular pair of equal shields. The posterior frontals generally form a suture, but sometimes they are partially or even entirely separated by an intercalated shorter, or longer, or by two, shields. The posterior supraciliaries are often broken up into two shields. The form and number of vertical and occipitals is persistent. The large shield below the orbit sometimes rests on two or on three labials, and occasionally it touches the labial margin itself.

Fam. GECKOTIDÆ.

GECKO GUTTATUS (I. R. p. 102).

The young of this, and indeed of most other species† of Geckoes, are dark, or blackish brown, with white spots. Few small spots are on the hinder part of the head, while on the body they are larger and generally arranged in 7 irregular cross series, the first series being placed immediately behind the occiput and the last between the hind limbs; tail blackish with 7 white rings, the last occupying the tip.

The general structure is exactly as in the old, but the tubercles are much flatter; there are (in several specimens) only 34 longitudinal series in the middle of the belly, while in old ones the number rises to 50.

PTYCHOZOOON HOMALOCEPHALUM.

I. R., p. 105 and Journal A. S. B., xxxix, p. 159.

This species occurs both at the Nicobar and Andaman islands.

* Günther says it only reaches 'the front edge of the orbit,' but he gives the fore limb 11 lines, which is exactly the distance between the axil and the nasal shield in all my specimens measuring 7 inches.

† It is, therefore, very probable that the specimen of *Gecko Smithii*, Gray, which I noticed on p. 161 of Jour. A. S. B., 1870, Vol. xxxix, has still the coloration of the young, and may lose most of the white spots, when adult. Dr. Anderson when re-describing the same in Proc. Zool. Soc. for 1871, p. 159, subsequent to the publication of my paper, omitted to notice the identity of the specimen, which it is necessary to do, because a misprint occurred in my statement (l. cit. on p. 162) as regards the total measurement, this being 4·8 inches (instead of 5·8 inches), but the other detailed measurements are correct.

HEMIDACTYLUS.

I have observed in several hundreds of specimens of different species of *Hemidactylus*, (as restricted, and of the section *Doryura*), as well as in the allied genera *Peripia* and *Nycteridium*, that the total absence, or the presence, of a few enlarged tubercles does not constitute a sufficiently distinct specific character. The variations in this respect cannot be accounted for either by age, sex, or the locality, but they are simply accidental. The species belonging to the section *Doryura* have generally a nearly uniformly granular body, well developed paratoid glands and normally a smooth tail, while in *Hemidactylus* the tail is normally spiny, but, when reproduced, it becomes smooth.

The distribution of the Indian and Burmese species of *Hemidactylus* is the following :

1. II. *TRIEDRUS*, Daud. (I. R., p. 107). Ceylon, South and Central India (Bundeleund).*

Nothing reliable is as yet known about the form for which Jerdon suggested the name *H. subtriedrus* (Jour. A. S. B., Vol. xxii. p. 467). (see pl. ii, fig., 1†).

It is perhaps not specifically different from *triedrus*, but there certainly exist some forms which possess the distinctive characters noted by Jerdon of his *subtriedrus*. Mr. W. T. Blanford kindly allowed me to examine two specimens which he lately collected near Ellore, and which, although agreeing in form, general structure and coloration with *triedrus* (for instance the figure in Belanger's Voyage), differ somewhat from the description usually given of that species. The two specimens are both females, apparently not full grown, and measuring on the average $4\frac{1}{2}$ inches, of which the head is about $\frac{3}{4}$ inches, and rump $1\frac{1}{2}$ inch. None of the tubercles on the back is as large as the opening of the ear; the head does not appear to be shorter than in typical *triedrus*, but the scales on muzzle and throat are certainly very small; a great number of moderately enlarged tubercles on the hinder part of the head; two enlarged shields behind the rostral separated by two small azygous shields; nostril situated between rostral, suprarostreal, first labial and two moderate shields behind; 10 to 12 upper labials, not constant, a row of conspicuously enlarged scales above them; 10 very distinct and well developed lower labials; 2 pairs of chin-shields, first forms a suture; 32 long rows of scales across the middle of the belly. The coloration, which was noted by Mr. Blanford during life is: body generally bluish grey with 5 olive brown, black-edged bands on the body and about 6 on the tail; of the former the first is situated on the neck, 2nd on the shoulder and the last be-

* Proc. A. S. B. for 1870, p. 74.

† Side and lower views of head; natural size.

tween the hind limbs. The band on the neck is darkest. The edges of all are darker and more irregularly undulating in front than behind; a yellow black edged band passes from the nostril to the eye, slightly continuing behind, the lower black margin is the more distinct one and continues through the ear to the cross band on the neck, with the anterior black margin of which it is confluent; upper half of orbit and some spots below eye yellow; head pale, uniform; tubercles on back yellowish, those on the edges of all the blackish bands and at the sides of the belly more distinctly so, brightest on neck; limbs unspotted; below yellowish, all scales minutely punctated. In spirit the whole of the yellow coloration has turned pure white and the dark bands are now white edged.

2. *H. MACULATUS*, D. and B.

(Günther, I. R., p. 107.—Stoliczka in J. A. S. B., vol. xxxix, p. 164, and Blanford, *ibidem*, p. 361.

3. *H. PIERESI*, Kelaart, (= *H. Sylkesi*, Günther, I. R., p. 108).

It is, I think, clear that Dum. and Bibron, when describing their *H. maculatus*, had under examination the two forms which Günther separated, and for one of which (considered as the young by D. and B.) he retained Dum. and Bibron's name. The two forms are, no doubt, extremely closely allied, and it has yet to be satisfactorily proved, whether *H. Pieresi* should more appropriately be considered as a large local variety of *maculatus*, or as a distinct species, but, I believe, the view taken by Kelaart and Günther, and first of all by Gray, is the correct one. It is certain that *maculatus*, as restricted by Günther, never appears to attain on the continent of India and Burma a larger size than $5\frac{1}{2}$ inches, and this measurement was observed only in two cases among about 200 specimens from South India, Central India, N. W. Provinces, the Sub Himalayan hills, and almost all parts of Bengal, Burma and the Andamans. The usual size is 4 or $4\frac{1}{2}$ inches.

In all these specimens the head and body is brown spotted, the spots on the latter have a tendency rather to arrange themselves in longitudinal than in cross series; in the three median rows the spots are larger and more distinct than at the sides, where they generally become rather confluent. The brown spots are equally distinct, or equally indistinct, in males and females, the variations apparently depending upon the seclusion of the locality in which the lizards live. However, I have repeatedly observed, that in specimens which had the tail reproduced, the brown spots do not retain the same distinctness which they had before. South Indian specimens are generally of dark hue, and often have some of the enlarged tubercles white. Young specimens are always dark brown, with still darker spots, while the majority of the enlarged tubercles is purely white.

As regards structure I find the enlarged tubercles slightly vary. They are always well marked, along the back distinctly trihedral, on the sides often more

rounded; they are arranged, as a rule, in 16 to 20 alternating, longitudinal, but not very regular rows; they are slightly larger and sharper in adult males than in females. The enlarged scales on the middle of the belly somewhat extend to the sides and are usually in 38 or 40 longitudinal series. The femoral pores in the male are 10-14 on either side, very rarely united in the preanal region; as a rule, they are separated by 1 or 3 or 5 scales; if 3 intermediate scales are present, which is very often the case, they are arranged in a triangle.

The specimen recorded by Theobald in Cat. Rept. Asiat. Soc., p. 30, under the name "*H. fasciatus*, Gray (?)" is *H. maculatus*; the former having been described from an unknown locality must, therefore, provisionally remain under that doubtful head, and not be added to the Indian fauna.

The four specimens in the Museum from Ceylon, recorded by Theobald in Cat. Rept. Asiat. Soc. p. 30, No. 41, as *H. maculatus*, belong to the larger form; two of them have the body about $3\frac{1}{2}$ inches and in one the tail is $3\frac{1}{4}$, giving a total measurement of nearly 7 inches. In structure of scales, tubercles and shields, the specimens do not exhibit any important difference from *maculatus*, as usually understood, though at the first sight they appear quite distinct. The two other specimens equal in size typical *maculatus*, but when closely compared with specimens of this species, they evidently possess a certain aspect of immaturity and tenderness of the skin, &c.; their heads are proportionately larger, and the same is the case with the trihedral tubercles, which are present in a slightly smaller number (14-16 rows); their colour is almost uniform whitish. In the two adults, the differences are still more marked, and the brown marbling has an inclination to form transversely arranged bands, very similar to a specimen described by Günther under the name of *H. Sykesi*.* The number of femoral pores is 32-36, in a slightly interrupted series. For this Ceylonese form, Kelaart proposed the name *H. Pieresi* (Prod. Faune Ceyl. 1852, p. 159), and as far as can be seen from the drawing of *H. Sykesi* (in Günther's Reptiles), the latter does not in any way differ from the former, therefore, Kelaart's older name must take priority. It also seems to me clear that Dunn and Bibron's largest specimen of *maculatus*, of which they give measurements, is the *Sykesi* of Günther; it is said to occur in the neighbourhood of Bombay, wherefrom Dunn and Bibron received it. Dr. Gray is evidently the original observer of the two forms, the small *maculatus* and the large *Pieresi*, as shewn by him in his 'Lizards' p. 153, where he gives "*H. Sykesi*, Gray, B. M." as the synonym of *maculatus*; and among the specimens of that species he quotes "*a. In spirits. Female? India, Dukum. Presented by Col. Sykes.*" This is to all appearance the only type of Günther's species, bearing the name *H. Sykesi*.

* Of Gray?

Kelaart (Prod. Faunæ Ceyl., 1852, p. 158) also gives *H. Sykesi*, Gray, as the synonym of his doubtful *maculatus*. The history of the species appears to have been overlooked by Dr. Günther.

H. maculatus, as restricted, occurs in Ceylon, throughout India, Burma and the Malayan Peninsula extending to Sumatra, Java, &c. Peters in Van der Deeken's Reisen gives it also from the Seychelles. It is a very common species in houses about Calcutta.

H. Pieresi is as yet known only from Ceylon and from the Dakhin (Dekan).

4. *H. GRACILIS*.—A very beautiful species described by W. T. Blanford from Berar and Raipur in Central India (Journ. A. S. B., Vol. xxxix p. 362, pl. xvi, figs. 4-6).

5. *H. RETICULATUS*, Beddome. Madras J. Med. Sc., 1870, p. 33.

6. *H. FRENATUS*, Schlegel, (I. R., p. 168).

Hem. sublaviv, Gray, apud Theobald, Cat. Rept. Asiat. Soc., p. 30.

H. frenatus, in Journ. A. S. Beng., vol. xxxix, p. 164.

? *H. punctatus*, Jerdon, 1853, Journ. A. S. B., xxii, p. 467.

This species which usually grows to about 5 inches, (rarely attaining 5½) is readily recognised from all other Indian *Hemidactyli* by the small size of the thumb and inner toe; the claw on it is setiform and often so fine as to be hardly traceable. The body is finely granular, but there are always some enlarged rounded tubercles present. In Bengal specimens, two alternate series of those very usually run along the centre of the back, and there are besides about 3 irregular rows on each side of the body. Dakhin (Dekan) and Upper India specimens generally have no enlarged tubercles in the middle of the back. The tail is spiny, unless it has been reproduced, in which case it remains smooth. The femoral pores are either interrupted by one enlarged scale, or they are continuous above the preanal region. The colour is very variable,—uniform grey, or greenish grey, very closely marbled and spotted with dark; or grey with some irregular stripes and close marblings, the former most distinctly marked on the neck and the sides of the belly; or dark brown with some irregular blackish stripes; there is, however, always a more or less distinct pale (during life sometimes yellowish orange) band present, passing from the rostral through the eye and either disappearing above the ear, or continuing along the side of the body down to the groin; this pale band is margined above and below by a dark line. The tail has sometimes an orange tinge, particularly after the cuticle had been shed.

H. frenatus is the commonest Gecko from Ceylon and through India, extending in a northwesterly direction as far as the Panjáb, and occurring all through Bengal, Burma and the whole of the Malayan Archipelago, includ-

ing the Andamans and Nicobars. From all these parts I have examined specimens. It occurs in houses as well as on trees, and among stones. According to Peters it is also found at the Seychelles.

I am strongly disposed to believe that Jerdon's *H. punctatus* was based upon a young female specimen of *frenatus*. I possess specimens which in every point of colouration, and structure and measurement, agree with Jerdon's description, the only apparent discrepancy lying in Jerdon's statement to the effect that "the thumb appears as well developed as in *maculatus*." In some respects this is really the case, the basal portion of the thumb being in the two species nearly equally developed, occasionally almost more so in *frenatus*, but the free claw bearing portion of the thumb is always somewhat shorter in *frenatus* than in *maculatus*.

7. *H. LESCHENAUULTI*, D. AND B.

Günther, I. R., p. 109. *Idem*, Jerdon, J. A. S. B., xxii, p. 468.—*H. Coctai*, apud Kelaart, Prod. F. Ceyl., 1852, p. 169.—*H. Kelaarti* and *Leschenaultii*, Theobald, Cat. Rept. Asiat. Soc. Mus., p. 29 and 30.—*H. marmoratus*, Blf., Jour. As. Soc. Bengal, vol. xxxix, part ii, p. 363, pl. xvi, figs. 1-3.—*H. marmoratus*, Kelaarti and *Leschenaultii*, Blanford in Proc. A. S. B. for August, 1871, p. 173.

The present species generally has, like the previous one, some enlarged, rounded tubercles on the back, at least on the femoral region, more rarely are the tubercles scattered over the entire body. The colour is rarely uniform silvery grey, generally there are some transverse, zigzag dark marblings traceable, and there is usually a dark band through the eye present; 10-16 femoral pores on each side, widely separated in the preanal region.

The species can readily be distinguished from *frenatus* by the well developed thumb, and from *Coctai* by the greater number of femoral pores, somewhat less widely separated in the preanal region. Kelaart's *Coctai* is evidently this species, and was named *Kelaarti* by Theobald, as pointed out by Mr. Blanford, who formerly separated a small Central Indian variety, with a nearly uniform granulation, as *H. marmoratus*.

H. Leschenaultii occurs in Ceylon, whence some years ago specimens have been identified by Professor Peters* and Dr. Steindachner; it is common all through South India according to Jerdon and in Central India according to Blanford. I have obtained a few specimens on the Parisnath hill and near Ranigunj in Bengal, and others from near Patna and Agra. It is not known from North-Eastern Bengal, and thus may be regarded as a true *Indian* species.

8. *H. MORTONTI*, Theobald, Journ. Linn. S., Zool. X, p. 32. Close to *frenatus*, but having the thumb and inner toe well developed.—Burma.

* Berlin Akad. Monatsb. 1860, p. 183.

9. *H. Coctæi** (I. R., p. 109).

Theobald, Cat. Rept. As. Soc. Mus, 1869, p. 29.

Steindachner, Novara Rept., Pt. I, p. 13.

H. Bengaliensis, Anderson, Journ. A. S. B., vol. xl, p. 14.

This is the most common species all through Bengal, whence it was originally described by Dum. and Bibron. The thumb is well developed, as noted by the French authors and by Cantor, but the claw small, as observed by Dr. Günther, who identified *Bolt. sublaevis*, Gray, with the present species. The back is generally equally granular; sometimes there are a few larger rounded tubercles present on the sacral region, more rarely also on the sides of the back, the variations being in this respect exactly similar to those noticed in *H. Leschenaultii*. The larger tubercle on the side of the neck, stated by Dr. Anderson to distinguish *Bengaliensis* from *Coctæi* is quite as often present as it is absent. Tail, when original, segmented, with one or two large elongate scale-like lateral tubercles near the base, and 2 to 3 smaller ones on the upper sides, but as a rule none along the middle; subcaudals enlarged. On reproduced portions of the tail, there are sometimes a few large scales present at the lateral edges, but more commonly the tail remains quite smooth. I have never seen, even in the largest specimens, more than 8 femoral pores in each row, they being widely separated in the preanal region; the usual number of pores is six in each row, rarely less.

During life, the general colour is greenish grey, with 5 transverse, broad undulating greenish brown bands, the first on the neck, the fifth on the loin, and all edged with white posteriorly; the tail is similarly banded above, and the white edgings are often more conspicuous; a pale band through the eye on the side of the head, margined with dark above and below, and generally becoming obsolete on the neck. The iris is reddish golden, pupil narrow, black with undulating edges. The animal changes its coloration very rapidly during life, sometimes the transverse bands turn almost to blackish brown, and another time they become quite obsolete. In spirits the brown tints partially, and in time entirely, fade. Below white, most of the scales generally very minutely punctated with black. Old specimens, particularly the females, have the tail at the base often very bulging, depressed, and nearly three-fourths of an inch broad.

I have not seen specimens of this species from farther southwards than Orissa, but it is very numerous in Western Bengal, extending through the North West Provinces up to the foot of the hills at Kangra and Hurdwar, westward into the Panjáb and eastward into the lower parts of Sikkim, the Khasi hills, Cachar and the whole of the Gangetic delta. I did not obtain it in Burna, but two specimens have been sent to me stated to have been procured in Pegu. Dum. and Bibron record it from Bombay, which very

* ? Is the right name *Cocteani* ?

likely refers to some locality in the Western Ghâts. Jerdon does not quote it from South India and Kelaart's Ceylon *Coctei* is *Leschenaultii*. Cantor (Mal. Rep., J. A. S. B., xvi, p. 629) gives it as occurring in Penang, and notes a specimen 7 inches long, the head above being $1\frac{1}{4}$ inches, which is a somewhat unusual size.

In general structure and coloration, *H. Coctei* is very closely allied to *Leschenaultii*, differing from the latter by the smaller number of femoral pores, and somewhat more elongated and narrower fingers and toes, with more numerous and thinner plates below, the toes being in *Leschenaultii* more broadly oval, shorter and the plates below coarser; the thumb also is somewhat shorter. Judging from the known geographical distribution, it appears to me very probable that *H. Coctei* replaces in the Gangetic delta *H. Leschenaultii*, which is a more southern form; and both appear to meet together in Western Bengal and the southern part of the N. W. Provinces.

In Calcutta this is the largest *Hemidactylus*, usually seen on the outer walls of houses or godowns. It is readily known by its coloration. The usual size is 6-7 inches, the body being $3\text{--}3\frac{1}{2}$ inches, while the tail is often reproduced. On one occasion I obtained two specimens, each of nearly 9 inches, the body being $3\frac{1}{2}$, and the tail (perfect) a little above 5 inches.

10. *H. AURANTIACS*, Beddome, Madras J. Med. Sc., No. 1, 1870, p. 33.

A uniformly granular species, without any enlarged chin-shields. Shevaroy and Anamallays, South India.

11. *HEMIDACTYLUS GIGANTEUS*, n. sp. Pl. II. fig. 2.

Pl. II. fig. 2, 2 a, 2 b, top, side, and lower views of head, 2 c, inside view of the sacral region and right foot; all figures in natural size.

General form very similar to that of *H. Coctei*. Head and body above uniformly granular, the scales on the snout being, as usually, slightly larger, and sharper, and those on the hinder part of the head smallest; two enlarged shields behind the rostral, separated by one or two minute scales, nostril situated between the rostral, the suprarostral and a semicircular shield behind, on the lower side in contact with the rostral, excluding the first labial from entering the nostril, 14-17 upper and 11-13 lower labials; two pairs of chin-shields, the first in contact anteriorly partially separated by the pentagonal inferior rostral; the second chin-shield about half the size of the first, slightly elongate or rounded and followed by a few smaller scales along the labials; scales on belly slightly hexagonally elongate, in 10 to 14 longitudinal series; some on the pubic region are pointedly elongate, but none are particularly enlarged; in the males 18-20 femoral pores on either side of the thigh, separated in the preanal region by an interspace of about 7 scales width; tail indistinctly segmented, generally reproduced and then without any

segments, rather abruptly tapering, occasionally very bulging near the base, uniform scaly above and at the sides without any enlarged spiny tubercles; subcaudals moderately enlarged, beginning to be so a short distance from the anus; about 11 transverse lamellæ on the first, and 14-15 on the fourth toes, the two or three basal lamellæ and the terminal one being in each case simple; thumb well developed.

This species is very closely allied to *H. Coctæi*, and I might have considered it as a gigantic variety of the same, had it not the peculiarity of the first labial being excluded from the edge of the nostril, which is a character constant in all the specimens, none of them also have any enlarged spiny scales at the side of the tail; but the most important distinction lies in the presence of a large number of femoral pores, which are also somewhat less widely separated in the preanal region, than they are in *H. Coctæi*.

The general colour during life is, according to Mr. Blanford, olive grey to blackish olive, with irregular dark, pale edged marks in imperfect circles, inclined to form 4 or 5 transverse undulating bands on the body. In spirit these irregular markings are slightly traceable, and the whole body is besides rather finely mottled with brownish olive. Below uniform white.

Hab. I have examined 9 specimens which were kindly lent to me for description by Mr. W. T. Blanford, who obtained the same in a solitary locality on the Godavári river near Badrâchalam, on trees. The body of the smallest measures $4\frac{1}{2}$ inch., and of the largest a little above 5 inches. All have their tails partially reproduced, and the longest is only about $4\frac{1}{2}$ inches, in its original state it must have been at least 6 or 7 inches. In one of the largest specimens, the length of the head is $1\frac{3}{8}$ inches, and the width at the occiput $1\frac{1}{8}$ inches.

12. *H. [DORYURA] BERDMOREI*, (Blyth). Pl. II, fig. 3.

Leiurus Bermorei, Blyth, Journ. A. S. B., 1853, xxii, p. 646.

Doryura Bermorei, apud Theobald, Journ. Linn. S., Zool. x, p. 29.

Pl. ii, fig. 3, upper view of a male specimen, 3a and 3b, side and lower views of head, 3c sacral region with a part of the tail; all figures in natural size.

Body and tail covered with small, equal, granular scales, those on the snout being somewhat coarser; tail depressed, rounded at the sides, contracted at the base, indistinctly segmented; numerous small scales behind the rostral and the nostril; 10 to 12 upper, and 9-10 lower labials; two pairs of chin-shields, the first large, separated above by the rostral, below forming a suture, those of second pair barely half the size, and each forming a suture with the respective anterior chin-shields and the second labial; there is usually a row of slightly enlarged scales along the lower labials, while those on the throat are very minute, almost granular, and greatly contrasting with the

larger scales on the abdomen ; ear opening rather small, rounded : a moderately developed gland on each side in the place of the paratoids, generally more distinctly seen above than below ; thumb small, well developed, with a minute claw ; about 38 long, rows of scales across the middle of the belly, extending somewhat on the sides ; 14-16 femoral pores in each series, separated by a width of about 3 scales in the preanal region : a row of transversely enlarged shields along the middle of the lower side of the tail.

Grey or light brown, slightly mottled with dark brown and four longitudinal series of blackish spots interrupted by white ones : two of the series originate on the superciliary region and two in continuation of a blackish streak, originating at the lower half of the eye ; head above and labials black spotted ; tail also with dark transverse spots above ; below uniform white, with the shields of the belly generally very minutely punctated. The brown series of spots are not in all specimens equally distinct, and sometimes they are almost obsolete. Specimens which have shrunk much in spirit shew, like all other *Gekkos*, a fold on the side of the body, and the tail becomes also slightly angular at the sides.

Blyth's original description of the coloration of this species is decidedly better, than the supposed improved one by Theobald. The type specimen came from Mergui ; Theobald found it common in Pegu ; I have received it from the Khasi hills, and collected a great number of specimens about Pankabari, just above the Sikkim Terrai, mostly on the outside walls of houses ; one specimen was also sent to me by Mr. A. W. Lawder from Ahnorah, in Kamaon.

The largest specimen from Pankabari measures $4\frac{1}{2}$ inches, of which the body is $2\frac{1}{8}$ inch.

13. *HEMIDACTYLUS* [*DORYURA*] *MANDELLIANUS*, n. sp. Pl. iii, figs. 1—2,

Pl. iii, fig. 1, upper view of a full grown specimen ; 2, 2 a, 2 b, 2 c, different views of the head and sacral region of another specimen ; all figures in natural size.

Body and tail depressed, covered with numerous small rounded tubercles, there being in old specimens generally a few larger ones perceptible at the side of the body and on the sacral region ; snout elongate, depressed, with the scales larger than on the body ; tail depressed, gradually tapering to a point, moderately convex above, somewhat flattened below, indistinctly segmented, laterally sharply keeled and serrated, the tubercles at the end of each segment being white and more prominent than others. There is a pair of somewhat enlarged shields behind the rostral, separated by a slightly smaller shield ; the nostril lies between the rostral, the 1st labial, the supra-nasal and two moderately enlarged post-nasals ; 12—14 upper, and 10—12 lower labials, the last in each case, as usually, very small ; 2 pairs of enlarged chin-shields, the first forms with the lower halves a suture below the

inferior rostral, the second is smaller, generally only half the size of the first, each shield rounded, placed immediately below its respective first chin-shield, but separated from the second lower labial by a smaller shield; a row of slightly enlarged shields adjoining the lower labials; scales on the throat very small, flattened, those on the belly much larger and roundly hexagonal, and in about 36 longitudinal, alternating series; a median row of transversely enlarged subcaudals. The ear opening is moderate, rounded; the glands in the place of the paratoids very large, occupying almost the whole of the side of the neck; toes elongate, united with a short web at the base, provided with rather coarselamellæ, there being 9 or 10 pairs of them on the fourth toe; nearly the first half of the lamellæ on all the toes is either undivided or only slightly grooved; thumb well developed, with a minute claw. Out of 10 specimens examined of various sizes none had femoral pores, but the scales in the preanal region are conspicuously enlarged in all.

Grey, more or less densely marbled and punctated with blackish brown and spotted with pale white. Generally the brown colour is arranged in 6 or 8 longitudinal stripes, more distinctly regular in young than in old specimens, and these stripes are separated by irregular, alternate rows of white spots; limbs, and tail at the base above, also white spotted, upper labials brown; paratoids yellowish brown; lower side uniform white, most of the scales very minutely punctated.

Hab. I have obtained a few specimens at Pankabari, just above the Sikkim Terai, and Mr. Mandelli sent me several from the Rungnu and Tistá valleys, where the species occurs between 1,000 and 3,000 feet. The body of the largest measures $2\frac{1}{2}$, tail 3, = $5\frac{1}{4}$ inches. As nearly half of the plates below the toes are undivided, the species forms a connecting link between the section *Doryura* and those small species of *Geckos* which are represented by *G. Swinhoensis*, and are mostly peculiar to Southern China, Japan and adjacent islands.

14. HEM. [DORYURA] GAUDAMA,—from Tonghú in Burma.

Theobald, Journ. Linn. S., Zool. x, p. 30.

Unless authentic specimens are received, it will be difficult to identify this species from Theobald's description. It appears to be somewhat allied to *H. Mandellianus*, but the edges of the tail are said to be in the former minutely "denticulate with an obsolete marginal spine;" "sides" of body "keeled" and "femoral pores nineteen on each thigh," &c. "Grey with no definite markings." Body equal to tail.

15. HEM. [DORYURA] KARENORUM, Theob. (*ibidem*), from Tonghú, Burma.

"Back granular, regularly shagreened with about twenty longitudinal rows of small whitish tubercles," &c.

PERIPIA, Gray (I. R., p. 110.)

Peripia might, like *Dorygura*, be considered as a subgenus of *Hemidactylus*. It connects *Dorygura* with *Nycteridium*, having the general form and usually flattened pointed tail and small equal granular scales of the former, while the toes are distinctly webbed at the base, and there is also a distinct expansion of the skin at the hinder side of the femora and tibiae. In *Nycteridium* only the lateral expansion of the skin of the body is added to the character of *Peripia*. If we characterize the later genus from the two Indian species, *P. Peronii* and *Cantoris*, we cannot say that the thumb and inner toe are without an unguis phalanx. I have examined very numerous specimens of the former, and a few of the latter species, and I find that the unguis phalanx on the thumb is very nearly, but never entirely obsolete, it, however, always appears to be clawless. On the inner toe the unguis phalanx is extremely small, but in nearly all my fresh specimens I find there is a very minute, thin, transparent, setiform claw present; only in some old specimens I have not been able to detect it.

P. Cantoris occurs in Penang, Burma, the Andamans and Nicobars; from all the localities I have examined specimens.

P. Peronii is very common on Penang,* and in the Wellesley Province, rarer in Burma and on the Andamans. The type was from Mauritius, and according to Kelaart† it is also found in Ceylon. Andamanese specimens agree in their very distinct brown tinge with those from the two later islands, while Penang specimens are brown, when young, but when adult usually greenish ashy, rarely with a rosy tinge. Two adult fresh specimens from the Andamans perfectly agree in structure with those from other places: the general colour above is pale chocolate brown with a rosy tinge, all over speckled with darker brown and with numerous round white spots, about $\frac{1}{2}$ m.m. in diameter; below white, pinkish towards the sides, and all scales minutely punctated.

NYCTERIDIUM PLATYURUS, Schneider.

1792. *Stellio platyurus*, Schneider, Spec. Physiol. Amph., ii, p. 30, and Denk. Acad. München for 1811, p. 62, pl. i, fig. 3.

1802. *Lacerta Schneideriana*, Shaw, Zool., III, 278.

1864. *Nycteridium*‡ *Schneiderianum*, apud Günther, I. R., p. 111.

1870. *N. Himalayanum*, Anderson, J. A. S. B., vol. xl, p. 15.

I have Asám, as well as Himalayan (from near Darjiling) specimens for comparison, and they certainly belong to the same species. They also do

* Comp. Journ. A. S. B., vol. xxxix, p. 163.

† Prod. Faun. Zeyl. p. 187.

‡ Gray's name *Platyurus* certainly has the same derivation, as *Platyrus*, and as it has been at an early date replaced by *Nycteridium*, it seems advisable not to revive the former name, particularly as it would involve a change in the specific denomination, and may besides lead to misunderstanding.

not differ in any essential point of structure from the description given by Günther, who has evidently seen specimens from various parts of the Malay Archipelago, from Ceylon, and also from Asám and Bengal, considering them all to be identical. The same conclusion has been arrived at by Dum. and Bibron in comparing Bengal and Javanese specimens. The Darjiling specimen described by Anderson as *N. Himalayanum* must have had accidentally a somewhat "flatter and more rounded" snout, as in four specimens from the same locality the outline exactly agrees with that of Dum. and Bibron's figure; I also cannot trace any stronger webbing between the fingers and toes, said to distinguish *Himalayanum* from *platyrus*. Darjiling specimens agree admirably with Schneider's original figure, (in which only the head at its base is shewn too broad); the proportion and form of the feet and their toes is exactly the same, the latter being contracted at their bases, connected by a membrane* and provided with 5—7 transverse, divided lamellæ. Schneider says there are 56 large subcaudals, and this is exactly the number I count in a full-grown specimen, with the tail perfect, and not reproduced. The femoral pores (16—20 on either side) are slightly interrupted in the middle of the preanal region. The only difference consists in the shortness of the first pair of chin-shields, but this cannot be more than an individual distinction, if really correctly drawn. The glands which are situated behind the ear, chiefly towards the lower surface of the head, are quite as often absent as present. Out of four Darjiling specimens they are very distinct in an old female, in one nearly full grown male they are small, and in two somewhat younger specimens of opposite sexes they are not at all developed. One of the principal distinctions of the specimen, named by Dr. Anderson *N. Himalayanum*, might be sought in the presence of some enlarged tubercles on the side of the body. A ♂ specimen from the Naga hills (Asám) has no enlarged tubercles; of the four Darjiling specimens one full grown ♀, and one half grown ♂, each have a distinct row of slightly enlarged tubercles at the side of the body, above the attachment of the lateral dermal expansion. One nearly full grown ♂ has an enlarged tubercle on one side and two on the other, just a little in front of the sacral region; the fourth specimen, a female, has the scales uniform granular. It will be seen from these observations that no specific value can be attached to the total absence, or occasional presence, of a few enlarged tubercles, as I had already occasion to notice in different species of *Hemidactylus*.

What is, however, very marked in all Asamese and Himalayan specimens, as compared with the usual descriptions of *platyrus*, is the large amount of dark coloration they possess. The general colour is olive, with a slight bluish cinereous tinge; the whole upper surface is densely variegated

* Which is clearly shown on the right hind foot between the 1st and 2nd and 2nd and 3rd toes.

and streaked with blackish brown, intermixed with some pale spots, particularly on the limbs; tail with dark brown and alternate irregular white spots. Some specimens have a kind of indistinct transverse, dark bands, one on neck, one on the sacral region and three on the back, they are separated respectively from each other, as in Schneider's figure, by three confluent white spots, placed in a triangle, with the point directed backwards; the three series of spots on the back are the most distinct. A whitish, or pale orange, band runs through the eye, indistinctly continuing on the side of the body; it is margined below by a blackish band, most distinct and broadest at the side of the head. Lower side of body and tail uniform whitish, the scales very often finely punctated.

CYRTODACTYLUS RUBIDUS, (Blyth).

Comp. Journ. A. S. B., vol. xxxix, p. 165.

This species occurs on the Andaman, as well as on the Nicobar, islands.

CYRTODACTYLUS AFFINIS, Stol.

Stoliczka in Journ. A. S. B., xxxix, p. 167, pl. x, fig. 1.

The young of this species is reddish brown with some darker brown marks on the upper side of the body, and a series of rather large white spots along the middle of the back. Penang.

GYMNODACTYLUS LAWDERANUS, n. sp.

Pl. II, fig. 4, side view of the animal, nat. size; 4a lower side of head and 4b, sacral region, both twice the natural size.

Body rather slender and elongate, depressed, covered above with numerous small roundish tubercles, between which larger ones of a similar shape, but of about double the size of the former, are internixed. Upper side of head equally granular, the granular scales being somewhat larger on the snout. Rostral large, broad, reaching well on to the upper surface of the snout; it is followed by 5 small granular scales. The nostril is situated somewhat laterally in the angle between the rostral, first upper labial, one small scale above and another similar one posteriorly. There are 9 upper, and 8 lower labials, the last three in each case very much smaller than the preceding ones. The lower rostral is triangular, partially wedged in between two elongated chin-shields, forming a suture below it. Each of the chin-shields is followed along the labials by 3 other somewhat rounded shields, none of which are in contact. Opening of the ear small, rounded. Scales on the chin small, equal, rounded; on the belly slightly elongated, and in about 32 longitudinal series across the middle; on the tail, which, however, appears to have been twice reproduced, the scales are also elongate, slightly smaller above than below, but not transversely enlarged, and without any enlarged spines at the sides. The fore limb reaches to the snout, and the hind limb very nearly to the axil, when laid forward. The 3rd and 4th fingers and toes

respectively are perfectly equal, and close together. All the claws are well developed, lying between enlarged scales, at the sides and above, but they are not retractile. A few slightly enlarged scales above the anus, superseded by two pairs of pores, close together, and forming an angle.

General colour above greyish brown, very densely marbled and spotted with dark brown, with some indistinct, undulating, whitish cross bands on the body, margined on the anterior edges with blackish brown; a somewhat indistinct dark band from the nostril through the eye to the ear; front and hind edges of the eye white; labials spotted and speckled with brown; below whitish.

Length of body nearly two inches; tail imperfect, only about one inch long, slightly swollen at the base.

Hab.—The single specimen from which the above description is taken was sent to me by Mr. W. A. Lawder, District Engineer of Kamaon; it was obtained in the neighbourhood of Almorah.

Cantor says, when speaking of *Gymnod. pulchellus* (Journ. Asiat. Soc. Bengal, 1847, vol. xvi, p. 623) that there are two new *Gymnodactyli* preserved in the Museum of the Asiatic Society, one marked *P. laevis*, Blyth, based upon one specimen from Midnapore and two from Chaibassa,* the other, a nondescript species from Almorah, *Gymnodactylus nebulosus*, Blyth, MSS., allied to *Cyrtodactylus marmoratus*, Gray. I am not acquainted with any further notice as to the second species indicated, nor have I been able to find the specimen itself among the Society's collections; it is also not mentioned in Theobald's Catalogue. Under these circumstances it is of course impossible to accept the suggested name for the present species, particularly also as Major Beddome described already a quite distinct species from near Vizagapatam under the name *G. nebulosus* (Madras Journ. Med. Sc., for 1870).

I may also at this opportunity mention that Beddome's name *G. maculatus*, published in the same Journal, must be replaced by another one, there having been a *G. maculatus* described by Steindachner already in 1866 (Novara Rept. p. 16). A similar change is required with regard to Beddome's *Gymn. marmoratus* (M. J. M. Sc., 1870, p. 31), there having been a species described under the same name by Dum. and Bibron already in 1836 (Herp. Gén., III, p. 426).

Fam. AGAMIDÆ.

JAPALURA VARIEGATA, Gray.

Günther, Rept. of India, p. 133.

Anderson, Proc. Zool. Soc. Lond., 1871, p. 164.

This species has the power of greatly changing its colour. In some specimens (irrespective of sex) the iridescent green bands, in others the metallic or

* These are to all appearance the two *Eubleph. Harwickii*, mentioned by Theobald on p. 32 of Cat. Rept. Asiat. Soc. Mus.

reddish brown ones, are prevalent, the green is during life much mixed with yellow or white, and the width of the bands and spots themselves is very variable during life; a bluish tinge is often seen on the neck and on the sides of the body of male specimens. The end of the gular sac in the male is deep blue, (not black). The male also has the lower labials generally bluish brown, the upper often bright yellowish white, sometimes, however, both are reddish or pale brown. Numerous brown streaks radiate from the eye, one of these directed towards the tympanoid region is about twice as broad as any of the others; sometimes it is divided by a median line in two, but very rarely it is indistinct. In the females the contrasts between the colours is always less, they very often have uniform greenish and pale reddish tints prevalent. The larger scales occasionally form a distinct row on each side of the back, which thus becomes apparently tricarinate, as in the form noticed by Jerdon under the specific name *microlepis*. (See Proc. Asiat. Soc., Feb. 1870, p. 76).

Very common in Sikkim from elevations of 1,000 up to 9,000 feet. It is, strictly speaking, a ground lizard, hunting between stones and low bushes, but also takes refuge on a tree. It appears to be more common on higher than on lower elevations, but those living between 9,000 and 5,000 seem to reach the largest size.

I was somewhat surprised in reading Dr. Anderson's results (loc. cit.) of the examination of 21 specimens "of all ages and both sexes, from one locality," that is, the neighbourhood of Darjiling. Dr. Anderson arrived at the conclusion that Jerdon's *microlepis* is the female, and Jerdon's *plani-dorsata* the young of *variegata*. Now as I have* not only observed hundreds of living specimens of *Japalura variegata* in Sikkim, but have also collected and examined them, I may be allowed to say a few words on this subject.

I find 1st, that the males of *variegata* often are smaller than the females, or at any rate that the latter generally grow to a larger size than the former; 2nd, that the males have the enlarged scales on the back and particularly the spiny ones on the sides of the occiput comparatively larger and more numerous than the females, the difference being most marked in full grown specimens and in the breeding season, but I have collected male and female specimens in which the scales were nearly equally largely developed, and there is no apparent difference in the size of the smaller scales between the two sexes; 3rd, that the nuchal and dorsal crest in the male is, especially on the neck, comparatively higher than in the female, and that it generally is on either side accompanied by a series of somewhat enlarged, closely set scales, more conspicuous in smaller than in larger specimens, but they are not equally distinct in the female; 4th, that the colours in both sexes are similar and equally variable, but always brighter and more variegated in the male, particularly the green and yellow; 5th, that in young

* And so undoubtedly had Dr. Jerdon.

male and female specimens of *variegata*, the bodies of which vary between one and a half, and two inches in length, there is a similar, simple, continuous nuchal and dorsal crest present, as in the adults, with the usual respective difference in size noted as regards the two sexes.

These observations, on undoubted *J. variegata* "of all ages and both sexes," do not exactly agree with those recorded by Dr. Anderson. They do not exclude the possibility that *J. microlepis* might have been suggested for a specimen of *variegata* with accidentally somewhat smaller scales, but as I do not remember having seen Jerdon's type specimen, and at the same time I know, how very often Dr. Jerdon must have seen *J. variegata* in all its stages, I would defer the identification for the present. As regards *planidorsata* I have no hesitation in saying that Dr. Anderson is mistaken. I well remember Jerdon's two type specimens; they did not appear to be very young and were in beautiful preservation. Among the great number of specimens of *variegata* in the Indian Museum, which Dr. Anderson had been good enough to shew me, I could find none which would correspond with Jerdon's briefly indicated distinctive characters of *planidorsata*.

SITANA PONTICERIANA,* Cuv.

Sitana minor, Günther, I. B., p. 135.

The smaller form described by Günther as *Sit. minor*, and noticed by Blanford in Journ. A. S. B., xxxix, Pt. II, p. 365, also occurs in Western Bengal at the Parisnáth hill, and on the Sone river in Bihar, extending northwards through the North-West Provinces as far as Rurki, near the base of the Himalayas, westwards into the Panjab, Kattiawar and Katch, but it is not known from any part of Bengal East of the Ganges.

Colour: pale or darker brown above and at the sides, a dark band between the eyes; snout and occiput irregularly spotted and variegated with paler brown; 5 or 6 quadrangular spots on the back, followed by a few smaller ones on the tail; a pale yellowish line along the centre of back is generally present, and the edges of the back are also pale; a yellowish band on each side from below the eye through the ear to the groin, in full grown specimens only well marked at the sides of the neck. All these pale or yellowish bands, as well as some of the large scales at the side, and particularly the front side and the hind base of the femora, and the transverse pale bands on the limbs, have a very marked fleshy or rosy tinge, most distinct in full grown males. The pouch is tinged with blue and red in the males only during the breeding season, at other times it is slightly blue, but a blue line always continues from it along the chin to the lower rostral. The labials are often blackish. Below, yellowish white.

* Dr. Anderson informs me that he believes this form to be specifically distinct from true *Ponticariana*, differing from the latter by the intermixed larger scales &c.

The enlarged scales on the back, and especially at the sides of the body, are invariably well marked, but less numerous in female than in male specimens; they are during life yellow or golden, and during the breeding season often tinged rosy, or even vermilion. In Northern India the species does not appear to attain the size which it does in Central India, for none of the specimens from the former country are above $5\frac{1}{2}$ inches, the tail being generally more than twice the length of the body. The claws on fingers and toes are always black. The tympanum is usually covered by a yellowish hardened shield.

Jerdon (Proc. Asiat. Soc. Beng., Feb. 1870, p. 76) is, I think, correct in retaining the name *Ponticeriana*, for the smaller *Sitana* with long limbs, but I doubt that the larger form, for which he proposes the name *Deccanensis*, is really specifically distinct from *Ponticeriana*. I collected hundreds of them, in all sizes from 3 to 8 inches; they are all of the same type, as those I received from Ceylon and from South India, and I find the fore limb scarcely ever reaches the vent, while the hind-limb extends usually beyond the snout, except in a few full grown specimens.

CHARASIA, ORIOCALOTES and ORIOTIARIS.

The name *Charasia* has been proposed by Gray (Lizards Brit. Mus., 1845, p. 216) for the South Indian species, *Ch. dorsalis*, as type. I have examined numerous well preserved specimens of this and of another species inhabiting the greater portion of Central, and perhaps also of Northern, India, and this induces me to propose a somewhat different definition of the genus.

Char. Body elongate, somewhat depressed, covered with imbricate, or subimbricate, keeled scales, between which some slightly larger ones are intermixed, the scales being arranged in more or less indistinct transverse series; those on the lower side are often less distinctly keeled than those on the back; tympanum naked; a small tubercular spine at the posterior end of the supraciliary edge; some spines above the tympanum; nuchal and dorsal crest present, but low; (generally) a fold across the throat; scales on the tail subimbricate, not arranged in regular cross series; (no distinct gular sac, no femoral, or preanal pores).

Charasia must be classed next to *Trapelus*, to which it is very nearly allied.

Hab.—Terrestrial, generally found between blocks of gneissose rocks.

The distinctive points in the structure of *Charasia* are:—1st, the presence of a small tubercular spine on the hinder supraciliary edge; 2nd, the presence of some slightly larger scales intermixed between the smaller ones at the side of the body. It is true that these larger scales are very difficult to trace in *Ch. dorsalis*, but I have observed them in various young and old specimens. Were it not that they are, as a rule, better developed

in the allied new species, presently to be described, I would attach hardly any significance to these enlarged scales, but the variability of this character will be important in a comparison with other allied genera ; 3rd, the ventral scales are in young specimens of *Ch. dorsalis* distinctly keeled, and even in old ones the keels are generally traceable on the breast and in front of the anus. A peculiar character of the type species, *Ch. dorsalis*, consists in the very small scales of the body, but this character loses its value by the other species, *Ch. Blanfordana*, having all the scales comparatively much larger.

If, after this brief explanation, we compare with the above noted characteristics of *Charasia* those of *Oriocalotes*, as recorded by Günther, (I. R., p. 146), we find that there is no essential distinction between the two. According to the description of the species, the body of *Oriocalotes minor* would seem to be less depressed, and there is besides a shoulderfold noticed, but I doubt that these characters can be looked upon as generic differences ; they are certainly not regarded as such in the genus *Calotes*. The type species described by Günther, *O. minor*, is from Sikkin, but I have unfortunately never met with it. The only other species, *O. major*, noted by Jerdon from the Sutlej valley, (Proc. Asiat. Soc., Beng. 1870, p. 77) I consider intermediate between *O. minor* and *Charasia Blanfordana*.

There also appears to be very little difference between *Charasia* and *Acanthosaura*, and I think it doubtful that the species of the latter are arboreal in their habits ; however, I have never observed them alive.

A third form is Günther's *Oriotiaris* (I. R., p. 150). The only known species, *O. tricarinata*, was often observed by me in Sikkin ; it is like *Charasia* a ground lizard. The sole important difference from the latter genus, and the so-called *Oriocalotes*, consists in the absence of a shoulder or gular fold, a character which I do not consider to possess generic value. I believe, therefore, that *Charasia*, *Oriocalotes*, and most probably also *Oriotiaris* should form only one genus, to which *Acanthosaura* is very closely allied, if at all distinct. The three former are certainly ground lizards, as are also *Japalura*, *Agama*, *Stellio*, while *Calotes* is often not much more arboreal than terrestrial, *Bronchocele* is chiefly, and *Tiaris* entirely, arboreal.

CHARASIA BLANFORDANA, n. sp.

Charasia dorsalis, Gray, apud Blanford, Journ. Asiat. Soc. B., 1870, vol. xxxix, p. 368. Pl. III, fig. 5 and 5a. Upper and side views of the head, natural size.

Head elongately ovate, or subtrigonal, considerably shorter and blunter in young than in old specimens, with the paratoids very much swollen in the adult male. Head covered with small, subequal, carinated scales, those at the sharp edge of the canthus rostralis and above the eyes somewhat larger than others. Nasal shield large, swollen, single, the opening directed laterally upwards ; a minute spine, or a tubercle, at the posterior end of the superciliary edge ; two spines above the tympanum, one situated on the occiput and the

other somewhat posterior, but close to the tympanal edge. In size the tympanum very nearly equals the eye. A longitudinal series of about 7 or 8 enlarged scales below the eye. There are generally 10 or 11 flat upper, and 12 or 13, somewhat more convex, lower labials, both squarish, except the last which are much elongated. Lower rostral posteriorly much elongated, followed on each side by a row of 4—6 enlarged scales, separated by smaller ones from the lower labials.

All the scales of the head, body and tail above and below are imbricate, being arranged in somewhat indistinct cross series, and all are keeled. In young specimens the keels below are very distinct, in older ones they often become less marked, but except in the middle of the belly never entirely obsolete. At the sides the scales are intermixed with a few slightly larger ones, the latter being in younger specimens generally easily seen, but in adults they are more difficult to trace. There are 80—100 longitudinal rows of scales round the middle of the body. The scales on the tail are larger than those of the body, and again those along the upper median line exceed the adjoining somewhat in size. A distinct, though low, nuchal and dorsal crest is present in both sexes, disappearing on the tail; it is more developed in the male than in the female.

The fore leg reaches to the groin when laid backward. The hind leg generally reaches to the front edge of the eye, when laid forward; in some few very old specimens it only reaches to the posterior edge.

Young specimens are olive brown above, marbled and spotted with dark brown, with two dark cross bands on the upper snout, and one connecting the middle of the supraciliary edges. Along the middle of the back there are usually some enlarged, lozenge-shaped, brown spots. The sides are speckled with white, orange or red, this colour being generally confined to the enlarged scales. A brown band proceeds from the eye to the shoulder, margined below by a more or less distinct white band. The tail is encircled with brown and alternate whitish bands, generally interrupted on the lower side which is uniform dingy white. Full grown females retain the same colouration as the young, except that the series of lozenge-shaped spots on the back is more distinct, but males vary enormously in colour, exactly as in *Charasia dorsalis*. The lateral black streak on the neck is always distinct, but the entire head and anterior part of the body above and below become brilliant scarlet, or more often zinnabar red, while the posterior part is nearly entirely black; all the colours, however, change very rapidly after death.

The largest specimen measures 12 inches, of which the body is very nearly 4 inches.

Although closely allied to the South Indian *Charasia dorsalis*, the present form is fairly separable by its comparatively longer limbs, larger, more distinctly imbricated and stronger keeled scales, which are present round the

middle of the body in a considerably smaller number, there being 130-140 series of squarish scales in *Charasia dorsalis*, while there are only 80-100 sub-imbricate ones in *Blanfordana*. Also, the nuchal crest is much better developed in the latter than in the former species.

Ch. Blanfordana is given by Mr. Blanford from a large number of localities in Central India. I found it not uncommon on the gneissose rocks composing the Parisnāth hill, in Western Bengal; it is a true rock lizard, as noted by Mr. Blanford, who describes (loc. cit.) its habits at some length.

It is also very likely the species noticed by Blyth on one or two occasions from Birbhūm, and also, I think, from the Panjāb, under the name of *Ch. dorsalis*. Anderson in Proc. Zool. Soc. Lond., 1871, p. 168, repeated Blanford's incorrect identification of the present species, without, however, acknowledging the source he took it from.

CHARASIA (*Orioliaris*) TRICARINATA, Blyth.

This species was originally described by Blyth as *Calotes tricarinatus* (J. A. S. B., xxxi, p. 650), and afterwards by Günther as *Tiaris Elliotti*, subsequently made the type of a distinct genus under the name *Orioliaris*; (Rept. of India, p. 150, and Jerdon in Proc. A. S. B., Feb. 1870, p. 77, and Anderson, in Proc. Zool. Soc., 1871, p. 167.

I have already noted the great similarity of the generic characters of this species to typical *Charasia*.

Blyth's name '*tricarinatus*' refers to the presence of three keels on the anterior part of the body, there being besides the median crest a row of larger scales on each side of it, disappearing towards the middle of the body, but becoming again better traceable on the femoral region. The large spiny tubercles above the tympanum are always multicarinate on the upper side, and often bluish during life. The colour of the live lizard is generally bright grass green above, with the angular series of larger scales (directed backwards) often chocolate brown; the lateral keels on the neck are yellowish, sometimes margined with a dark line below. The sides of the body are either entirely green, with only two brown streaks above and below from the eye, or the sides of the head, tympanoid region, neck and anterior part of belly, are deep chocolate brown. There are, however, always some light yellow or whitish spots on the labials, and generally a yellowish streak at the base of the neck on each side. Lower side yellowish white. In spirit the green colours gradually change to more or less distinct brown.

As noticed by Jerdon, the species is by no means common about Darjiling; I found it between 3000 and 8000 feet, generally about large stones in sunny places on the scarp of the road. The largest specimen does not exceed 7 inches.

CALOTES ELLIOTTI, Günther.

Günther I. R., p. 142. —Jerdon, J. A. S. B., xxii, p. 171, and Proc A. S. B. for 1870, p. 77.

I collected this species at Matheran,* near Bombay. It is quite distinct from *Roulei*. The shoulder-fold is bluish black. It seems to be quite as much terrestrial, as arboreal in its habit. The small scales of the body (about 56 round the middle of it), and the little spine behind each superciliary edge strongly recall *Chalcidia*. Some of the scales at the side of the body are yellow, but they are not apparently larger than others. *Color*—pale brown, bright red on the head and about the shoulders, rest of upper side with indistinct dark stripes; lips and the knees dark; claw-ridge black; throat reddish, tinged with bluish; rest of underside white. The fore limb reaches to the groin, when laid backward, and the hind limb to the anterior edge of the eye, when laid forward.

In one specimen the head and body are $2\frac{1}{2}$, and the tail $5\frac{1}{2}$, = 8 inches.

STELLIO, Daudin (I. R., p. 157).

Four species of this genus can be distinguished in India, all appear to inhabit the Himalayas, or the country close to the base of the hills.

1. *St. Dayanus*, n. sp. Scales of the back moderate, smaller but continuous on the neck; enlarged scales at the side numerous. Hardwar.

2. *St. tuberculatus*, Gray. Scales of the back small, very much smaller or granular on neck; enlarged scales at the sides scattered, generally few, or nearly all obsolete. Southern slopes of the Himalayas.

3. *St. melanurus*, Blyth (comp. Proc. A. S. B., Sept. 1871, p. 189). Enlarged scales of the back unequal, those composing a few median rows considerably larger than others on either side. Panjab and Kashmir.

4. *St. Himalayanus*, Steindachner, (Novara Rept., Pt. I, 1867, p. 22). Enlarged scales of the back smooth; Ladak, Northern Indus valley.

I shall note in greater detail the two first mentioned species, as they are closely allied to each other, while the two remaining are so entirely distinct that there can be no mistake about them.

STELLIO DAYANUS, n. sp.

Pl. III, fig. 4. Upper view of the anterior part of the body.

Head depressed, covered with small sharply keeled shields, irregular in form, slightly larger on the canthus rostralis and becoming gradually imbricate on the hind occiput; nostril in the hinder part of an elongate swollen shield, narrow in front, but usually separated from the rostral, as well as from the first labial, by a separate shield; a ridge of somewhat larger scales origi-

* Günther refers, I suppose, to the present species when noticing *C. Roulei* from Matheran (Proc. Zool. Soc., 1869, p. 501).

nates a short distance behind the nostril, and passes below the eye in a slight ascending curve to the upper edge of the tympanum; 10—12 upper and as many lower labials; a short ridge of spiny scales is in continuation of the upper labials directed towards the lower edge of the tympanum, but separated from it by a tubercular group of spines; tympanum slightly smaller than the eye, with a group of spines in front of it; numerous groups or irregular short ridges of enlarged spiny scales at the side of the neck, the skin on it being rather loose. Lower rostral sharply pointed behind; first pair of chinshields large and nearly touching below the rostral; one or two rows of enlarged scales follows on either side along the labials, separated from them by one or two rows of smaller scales. The throat fold extends laterally in front of the shoulder, where only a small naked pit of soft skin exists. Enlarged dorsal scales moderate, sharply keeled, in about 13 longitudinal series in the centre of the back; they are considerably smaller, but distinctly continuous on the neck and up to the occiput; nuchal crest small, composed of separate, sharply keeled, compressed scales; numerous enlarged, almost spiny, scales at the side of the body interspersed between the smaller ones; scales on the upper side of the limbs larger than those of the body; on chin small, subtubercular, very sharply keeled; on breast and belly indistinctly keeled or nearly smooth, often with a patch of enlarged, hardened, scales in the centre of the belly, where they are arranged in about 40 longitudinal series. Each thickened scale in the preanal patch is soft or spongy in the middle, and evidently secretes a similar fluid, as do the preanal and femoral pores of other lizards. Scales on the tail irregular at the base, but farther on arranged in verticils; their size is equal to those on the upper side of the feet.

The fore-limb when laid backward fully reaches the groin, but more often extends a little further on the sacral region, the fourth finger is a trifle longer than the third; the hind leg, when laid forward, sometimes reaches the snout, but usually only the front edge of the eye; the fourth toe is longer than the third by its claw.

General colour, in young, above and at the sides pale olive, variegated and spotted with black and yellowish white; throat reticulated with dusky blackish; rest of lower side white. Adults are throughout brownish or blackish, or with some indistinct darker spots along the back; head uniform, much paler; body above all over densely spotted with yellow, throughout reticulated with bluish, and there is, in adult male specimens always, some blue tinged with red, on the chest, on the sides of the head, neck, and of the belly, most strongly marked in the breeding season; sometimes the entire throat is purplish blue; lower side of body and of tail yellowish white; terminal two-thirds of tail blackish.

IIab.—I have received some 40 specimens from Dr. Day, who collect-

ed them at Hardwár, where the Ganges leaves the hills for the plains. They measure from 4 to 18 inches, in all stages of growth, the tail when perfect is fully $\frac{2}{3}$ of the total length. I find that in former years I also obtained this species at Misouri, and on the road from Kalka to Simla, having noticed the difference of the scales on the neck and back, as compared with those of the next species, but unfortunately I have no specimens by me now.

STELLIO TUBERCULATUS, (Gray), (I. R., p. 157).

Pl. III, fig. 3. Upper view of the anterior part of the body.

This well known species is readily distinguished from the last by the much smaller size of the enlarged scales on the back, which are in from 13 to 17 longitudinal series in the middle of it; on the middle of the neck the scales are not at all enlarged, but there is a low, often minute, nuchal crest present. The structure of the head-shields is in both species very similar, but they are always less distinctly keeled in *St. tuberculatus*, sometimes nearly, and above the eyes always, smooth; the enlarged row of scales below the eye is well marked; the nasal sometimes touches the rostral and first labial, but more generally it is separated from them by smaller shields; the enlarged spiny scales on the side of the neck are less prominent in this, than in the former species; the scales of the belly are proportionately smaller, in 48—54 transverse series; the enlarged scales at the sides are generally few, occasionally arranged in transverse rows, but sometimes they are nearly entirely absent; rarely, in male specimens, are these spines nearly as numerous and irregularly distributed, as in the former species. The patch of enlarged callous scales on the middle of the belly is much more often present, than in *Dayanus*. The fore-limb, when laid backward, generally does not reach the groin, but occasionally it does so; the hind-limb, when laid forward, usually reaches the tympanum, sometimes the eye, rarely the front edge of the eye, but I have not seen one specimen in which it extends to the rostral shield. The largest specimen I measured is $13\frac{1}{2}$ inches, of which the body is very nearly 5, and the tail $8\frac{1}{2}$ inches. On the whole, both the limbs and the tail are somewhat shorter in the present species than in the former.

There is also a difference in coloration. Young and adult specimens are above on body and limbs of a dark olive brown or almost blackish colour, with numerous darker spots in the young, indistinct in the adult, and intermixed with yellowish spots, these being fewer, but often larger than in *Dayanus*; occasionally they are entirely absent. The head in the adult is above cinereous olive, spotted black and yellowish at the side; in front of the shoulder, on the breast, and also at the sides of the body, there are often numerous bright yellow or orange spots present. Lower side uniform dull white in young, generally spotted with dusky on the throat. In adults the throat becomes

more or less spotted and tinged with reddish blue, extending partially on the chest, and in adult males the whole of the under side, including the lower side of the limbs, is bluish black, brightest and strongly tinged with purple on the throat, the same tinge extending on the neck, the shoulders and sides of the belly. An adult male is really a gorgeously coloured lizard. The usual habitat is between large rocks on bare or open slopes of hills.

Hab.—I have received numerous specimens of this species from Kamaon (near Almora) through Mr. A. W. Lawder; from Kanra and Dalhousie through Dr. Day, and from Mari through Mr. A. B. Wymc. About Simla; in Kulu, all through Chamba, Kishtwar and in Kashmir, I have in former years collected this species largely, it ranges up to 12,000 feet, and if the Spiti form is the same species, I have observed it up to nearly 14,000 feet.

There can be no doubt about Blyth's *St. indicus* being the same as *tuberculatus*, but whether the species really occurs in the plains near Mirzapur and Wuzirabad, I have not as yet been able to ascertain.

TIARIS SUBERISTATA, Blyth.

In addition to my description of this Andaman and Nicobar lizard in J. A. S. B., vol. xxxix, p. 180, I have to note the following.—The number of scales round the body varies between 90 and a little above 100, 18-22 scales being on the ventral side. The two groups of enlarged, or rather often only more pointed, scales on the upper side of the occiput usually exist only in old males. The subcaudals are slightly larger than the scales above and at the sides of the tail, the latter being more distinctly imbricate. The fore-limb when laid backward occasionally reaches as far as the anus, and the hind-limb when laid forward exceeds the tip of snout by one-third the length of the fourth toe.

As regards coloration I may add, that there is occasionally a distinct yellowish band present, extending from the occiput along each side of the middle of the back, on the lower side margined blackish. The two yellow bands form an outward angle opposite each femur and then unite into one, a short distance beyond the base of the tail, and are accompanied on either side by a series of large blackish spots. Extremities spotted or indistinctly barred with brown and yellowish white.

(To be continued.)

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Part II.—PHYSICAL SCIENCE.

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NOTES ON VARIOUS NEW OR LITTLE KNOWN INDIAN LIZARDS,—
by Dr. F. STOLICZKA.

[Continued from p. 116.]

Fam. SCINCIDÆ.

Genus. EUPREPES, Wagler, (as rest. by Günther).

EUPREPES [TILIQUA] MACULARIUS, Blyth.

Pl. V, fig. 1. upper view of the anterior part of the body; 1a, side view of the head; natural size.

See Blanford in Journ. Asiat. Soc. Bengal, 1870, xxxix, pt. II, p. 358, and Anderson in Proc. Zool. Soc. Lond., 1871, p. 157.

This species is readily distinguished from *E. carinatus* by proportionately shorter and stouter limbs, and by a somewhat shorter head. As a rule the scales are in full grown specimens seven-carinate, the middle carina being separated from the adjoining by a somewhat deeper and wider sulcus, than exists between the other ridges. In Sub-Himalayan specimens this is particularly well marked.

Blanford reported the occurrence of the species in various parts of Central India. The Indian Museum received specimens from Cachar and Asām, reported upon by Dr. Anderson. I obtained some on the Parimath hill, exactly identical in the small size and uniform coloration with those noted by Blanford. There are only a few whitish spots at the side of the neck and the dusky colour of the sides of the belly gradually passes below into the white one. Specimens sent by Dr. Day from the Sone river in Birbhūm

have no dark spots on the back, but numerous white spots at the side of the belly. The stripes at the side of the tail are in Central Indian specimens, and in those from W. Bengal, and also from northwards near Hardwar, very thin and often rather indistinct. Young specimens have 5, old ones 7 keels on each scale. Sikkin specimens from the Rungnu valley, (one of which attains the large size of $6\frac{3}{8}$ inches, of which tail is $3\frac{6}{8}$, and has 30 longitudinal and about 28 transverse rows of scales between the fore and hind-limb), generally have two or four rows of brown spots along the back, the spots becoming somewhat irregular and more prolonged on the posterior body; sides with blackish and more or less numerous white spots, the black spots inclining to form longitudinal series; sides of the tail very distinctly streaked with brown and white, but when the terminal half, or third, of the tail is renewed, it is uniform. In Sikkin I only saw the species in the lower valleys, up to about 3,000 feet, but generally at lower elevations, and by no means common. Asamese specimens do not differ in any particular from the Sikkin ones, and similarly coloured varieties were also collected by Dr. Day at Rurki, only the specimens are smaller, and the white spots at the side of the body fewer, and somewhat indistinct.

The species also occurs in the neighbourhood of Calcutta, where I obtained three specimens during the last winter (1860 to 1871). Each of these has on the back two distant, almost continuous rows of brownish black spots, and the brown colour between these rows is darker than that between them and the respective edges of the back. On the hind part of the body, the spots become broken up and finally disappear. The sides are either distinctly spotted, with white as in Darjiling specimens, or they are more uniform dusky; the tail is on the anterior half always longitudinally streaked with brown, intermixed with white. The lower side is uniform whitish, with the edge between each two scales slightly darker, forming the longitudinal "obscure dark stria," to which Jerdon alluded in his note J. A. S. B. xxii, p. 479. Some of the specimens obtained at Pankabari, on the northern edge of the Sikim Terai, agree in coloration with those from Calcutta, having the middle back darker brown than the sides of it, while others again have as many as eight longitudinal, more or less continuous, black bands along the back.

Pegu specimens do not differ from those from Asam and Darjiling, and I suspect that Theobald's Burmese species, identified by him with Kuhl's *E. multicarinatus* from the Philippines, is the same as Blyth's *macularius*, but the two are by no means identical, as suggested by Theobald, (Journ. Linn. Soc. Zool. x, p. 26). In comparing specimens from various localities, it struck me that the hill forms generally have stouter legs and shorter toes than specimens found in low country.

E. macularius appears, at least partially, to replace *E. carinatus* in Central India, but not apparently in South India; it is, however, in all the locali-

ties East of the Hooghly much rarer, than the latter species. There are evidently two distinct races: a smaller and almost uniform coloured variety, occurring all through the Central Provinces and extending northwards to the base of the hills at Hardwar, and westward probably into southern Panjáb; and a larger, and generally striped, variety, occurring eastwards all through Bengal, Asám and extending into Pegu.

Beddome (Madras Journ. Med. Sc. for 1871) appears to question the distinctness of *macularius* from *carinatus* (= *rufescens*), but there can, I believe, be no doubt on that point. Whether his 5-keeled specimens are *carinatus*, and the 7-keeled ones true *macularius*, must be decided on a re-examination of his specimens. Both species often occur together.

EUPREPES [TILIQUA] CARINATUS, Schneider.

Colour above brown or olive brown, with or without dark edgings to the scales, a pale band on the edges of the back; upper half of sides blackish with or without white spots, lower half pale, a short pale streak from ear to shoulder; below whitish, tinged with orange or red in males during breeding season, particularly at the sides of the belly. This is the usual colouration in specimens from Bengal, Central Provinces, Dakhin (at Púna) and Bombay. (Comp. Günther, I. R., p. 79 and Blanford, J. A. S. B., 1870, xxxix, pt. ii, p. 356). Specimens from Burma and the Malayan Archipelago are very similarly coloured (see J. A. S. B., xxxix, pt. ii, p. 169). Bengal specimens, of which I examined a very large number, have quite as often 5 as 3 keels on the scales, those from the Dakhin (Dekhan) and Bombay are mostly only three-keeled. As a rule there are 32 longitudinal rows of scales round the middle of the body in full grown specimens, in younger ones often 30, very rarely only 28.

EUPREPES [TILIQUA] TRIVITTATUS, Gray.

Gray, Ind. Zool.—Jerdon, J. A. S. B., xxii, p. 478.—Theobald, Cat. Rept. Asiat. S. B., p. 24.—Blanford, J. A. S. B., xxxix, pt. ii, p. 357.—Anderson, Proc. Z. S., 1871, p. 158.

This is undoubtedly a species distinct from *Tiliqua carinata*, and in part combining the characters of the latter, and of *T. monticola* which it considerably resembles in coloration. I received two specimens from Púna (in the Dakhin, = Dekhan) through my collector. They are both young, only $4\frac{1}{2}$ inches long, but when compared with equally large specimens of *carinata*, the head is, as stated by Jerdon, shorter and somewhat higher, the rostral is flattened above, the supranasals form a distinct suture, frontals proportionately smaller, (the anterior in one specimen obliquely divided in two shields), posterior frontals form a suture, the vertical is longer and posteriorly narrower, than in any specimens of *T. carinata* I saw. The other shields of the head do not differ. Edge of ear in front with 3 or 4 small, pointed, subequal lobules. Scales

round the middle of the body in 36 longitudinal series, and in 40-42* transverse series between fore and hind-limb; each scale with 3† median well defined keels, two others at the sides being only occasionally indicated.

Colour, above, olive brown, with three narrow, equidistant, greenish white bands, margined with blackish brown, and with one on each side of the body, passing through the ear; all five bands continue on the tail, but are less distinct; shields of head margined with dark; edge of eyelids yellow; feet above brown. Below, uniform yellowish white, tinged with fleshy posteriorly.

The head and body together are proportionately shorter than in the preceding species:

	<i>T. trivittata</i> .	<i>T. carinata</i> from Matheran.
Total length,	4.25	4.5 inches
Body,	1.85	1.85 „
Head alone,	0.85	0.90 „
Tail,	2.5	nearly 3. „
Fore-limb including claw,	0.6	0.6 „
Hind-limb,	0.75	0.85 „
Girth round the middle of body,	1.1	0.95 „

EUPREPES MONTICOLA, (I. R., p. 80).

This species has been found by Mr. Wood-Mason at Sahibgunj on the Ganges, and I obtained it also at Jabbalpūr in the Central Provinces; in both cases in the plains. The specimens exactly agree in structure with Günther's figure and description, but there usually is on each scale (particularly towards the edges of the back) a third median keel, between the two more distinct ones, traceable. Scales in 35 or 36 longitudinal series round the middle of the body, and in 34-40 transverse ones between the limbs. The lower eyelid has a distinct transparent simple disc, a character not noticed by Günther.

Colour, above and on the upper half of the sides greenish brown, with numerous black spots, sometimes inclined to arrange themselves in transverse series, a yellowish white band on each side and in the middle of the back, about one scale broad, but generally running along the sutures of two rows; sides greenish, spotted with pure white, their lower halves more or less tinged with black and white, and sometimes with an indistinct white band between the limbs, appearing better marked at the side of the tail; a yellowish black-edged streak below the eye, continued to near the ear, the frontal denticulations of which are yellow; edges of eyelids bright yellow. Below, uniform yellowish white.

I very much doubt that this is an inhabitant of the highlands of Sikkim, and Schlagintweit's specimens were most likely obtained in a low valley of that province, at 1000 or 2000 feet elevation, but not at 8000 feet, though probably preserved and ticketed in a comfortable station at that height; or

* 49 rows in adult, loc. cit.

† 5 keels are recorded in an adult, loc. cit.

else those gentlemen's barometers must have been, as usually in similar cases, out of order.

What Theobald quotes as *Tiliqua monticola* in Cat. Rept. Asiat. Soc. Mus., p. 24. is not this species, but to all appearance *Euprepes olivaceus*; there are three very slight keels on the dorsal scales, 30 longitudinal series round the body, and about 34 between fore and hind-limb: anterior frontal in contact with rostral, but separated from vertical by a short suture of the posterior frontals. Uniform olivaceous above, paler below.

EUMECES, PLESTIODON, HINULIA, RISTELLA and allied genera.

I adopt the name *Hinulia* as originally proposed by Gray.

The name *Eumeces* cannot any longer be retained for the species which are referred to it in Günther's 'Reptiles of Brit. India'. Already in J. A. S. B., vol. xxxix, p. 174, I have drawn attention to Dr. Peters' observation, that Wiegmann's name *Eumeces* had been proposed for Geoffroy's *Scincus parimentatus* = *Sc. auratus*, *Schneid.* = *Scincus Schneideri*, Geoff., = *Plestiodon Aldrovandi*, Dum. and Bib. &c. Therefore, *Plestiodon* is to be considered as identical with *Eumeces*, which is the oldest name. The only as yet known representative, we have of this restricted type of Lizards in India, is Blyth's *Eurylepis* from the Panjáb, which province has to a large extent an admixture of African forms in its fauna (Comp. Jour. Asiat. Soc. Bengal, xxiii, p. 739). Blyth, when describing *Eurylepis*, correctly refers to the figure of *Sc. parimentatus* in the 'Deser. de l'Egypt', but he was not aware that the species is identical with *Sc. Schneideri*, and that it is the type of *Eumeces*.* There does not appear to be a difference† between *Eurylepis* and

* Dr. Anderson (Proc. Asiat. Soc. B., for Sept. 1871) suggests that Fitzinger's name *Malania*, (or rather *Mabuya*, as invariably written by Fitzinger), should replace *Eumeces*. I do not think that there is sufficient reason for this. Fitzinger, when suggesting the name *Mabuya* in 1826, (in Verz. Rept. p. 23), certainly says that the lizard possesses palatine teeth, and the author places the genus in opposition to Gray's *Tiliqua* which, he says, does not have palatine teeth. But Gray's old genus *Tiliqua* includes a vast number of *Scincs* with and without palatine teeth. Moreover, Fitzinger, when giving in the same work (p. 52) a list of the species of *Mabuya*, quotes as the first species *Scincus quinque-carinatus*, Kuhl, as the second *Sc. ornatus*, Daudin, as the 12th *Sc. agilis*, Radde, and as one of the last *Sc. ocellatus*, Daudin, the *M. ocellata* per excellence of old author's; but neither for the first nor for the last species has Fitzinger's name *Mabuya* been retained. When writing his Syst. Rept. published in 1843, Fitzinger was perfectly well aware of this confusion, and dropped the name *Mabuya* altogether, most likely because it had not been accepted by Dum. and Bron. He quotes (l. cit.) Lacépède's "*Mabouya*" (*Sc. ocellatus*, Daud.) as the type of Wiegmann's *Geophylas*, and distributes the other species which he formerly referred to *Mabuya* into about half a dozen genera. In 1845 Gray wished to rescue Fitzinger's name, (more correctly written in the form of *Mabouya*), retaining it for Radde's *Sc. agilis* as type, and only in this signification can, I believe, the name *Mabouya* find a place in our literature, if we wish to avoid a greater confusion than already exists.

† Compare Anderson in Proc. A. S. B., Sept. 1871.

Eumeces. The dorsal scales of *pavimentatus* are often very irregular in their size, and enlarged, as are also those of Blyth's species.

The Indian and Malayan species, referred by Günther in his 'Reptiles of India' to *Eumeces*, are arranged by the same author under two groups. One includes *Hinulia*, *Mocoo*, and *Podophis*, the other *Mabouya* (type *Sc. agilis*, Radde) and *Riopa*, to which *Senira* has to be added, if Mr. Theobald is correct in identifying a lizard from Rangún with *Senira bicolor* of Gray (Linn. Soc. Jour., Zool., x, p. 27). Whether the three first named should be considered only as subgenera of *Lygosoma*, Gray, as adopted by several continental herpetologists, or whether they should be retained as distinct genera, is for the present not of very material importance. I can only say that the Indian species of *Hinulia* and *Mocoo* are fairly divisible, and the same is the case with *Mabouya* and *Riopa*. All have the palatal notch situated far backward and the palate itself toothless, but this is a very general character, and equally applies to *Hagri*, *Ristella* and several other well distinguishable genera.

Of *Hinulia* there are as yet only three species known from British India, and as they had been rather misunderstood, I shall give a figure of the head and of the sole of the hind foot of each, shewing the characteristic distinctions between them. *H. indica* is as yet only known from Sikkim and the adjoining hills; *H. maculata* occurs throughout Bengal and Barma; *H. Dussumieri* is from the Malabar coast. Of *Mabouya* and *Podophis* I do not know a single species which occurs within the limits of British India, as now understood (excluding Penang). Of *Mocoo* and *Riopa*, the species are numerous and mostly of small size.

HINULIA INDICA, Gray.

Pl. iv. fig. 1, 1a, side and upper views of the head, natural size; 1b, sole of left hind limb, twice the natural size.

Eumeces indicus apud Günther, I, R., p. 89, exclusive of the synonyms quoted under *Lygosoma* and *Mocoo*.—*E. indicus*, apud Anderson in Proc. Zool. Soc., 1871, p. 158 (in part).

The general structure of scales is as described by Günther. The number of longitudinal rows is usually 36 or 38; there are 60-70 transverse rows at the side of the body between fore and hind limb, but there are only 46-55 scales in a row at the edge of the vent between axil and loin. The fore foot, when laid forward, scarcely ever reaches the snout, but it usually extends in front beyond the eye. The four supraciliaries are followed by two small shields; ear opening large, without any denticulations in front.

The usual coloration is as originally described by Gray. Upper side brown, generally bronze, rarely with an olive tinge, uniform, or with a few

scattered dark spots; limbs above almost uniform brown; sides towards the back with a dark brown or blackish band, separated from the back by an indistinct, partially interrupted, narrow, white band; on the lower half of the sides the colour gradually passes into dull brown, more or less spotted or marbled with paler, which markings are generally also traceable in the dark band; sides of tail greyish brown with an upper dark edge, and marked with darker and paler small spots, or indistinct stripes. Below, uniform greenish iridescent white; limbs and tail of a pale fleshy brown colour during life.

This is a much larger species than any of the two following, but it is by no means common in Sikkin. I found it from the base of the valleys up to about 6,000 feet, and also received it from the Bhutan hills. It very likely extends eastwards into Asám.

The young specimen referred to by Dr. Anderson (l. cit.) under the head of *Eu. indicus* belongs to the next species; and judging from the description of the coloration in Günther's I. R. (l. cit.), it appears probable, that specimens of the next species were also referred to this one as young. There can, however, be no mistake about the distinctness of the two. *H. indica*, as compared with *H. maculata* is a much stouter and larger form, with comparatively larger scales, arranged in a smaller number of transverse rows between fore and hind limb; the former has 10 rows of scales on the back between the dark bands, the latter only 8; in *indica* the rostral, anterior frontal, and the supraorbitals are slightly convex, the interspace between the latter moderately wide, the preanal shields comparatively small; the palm and sole entirely covered with spinous tubercles, with some larger ones on the posterior edge of the sole. In *H. maculata* on the contrary the rostral reaches far backwards, is flat or almost concave above, the anterior frontal is also flat, the supraorbitals tumid with a very narrow space between them, and the palm and sole are only partially tubercular. There is also a difference in coloration; the lateral band at the side in *indica* is never very distinct, and is not margined below by a white line, which is always well marked in *maculata*.

In six specimens examined the length of the body varies between 3 and 3.75 inches, the tail being, when in its natural growth, about twice that length, but often it is reproduced and then about equal in length to the body.

HINULIA MACULATA, Blyth.

Pl. iv, fig. 2, 2a, side and upper views of the head, natural size, 2b, sole of hind limb, twice the natural size.

Comp. Stoliczka, in Journ. Asiat. Sc. B., xxxix. 1870, p. 174.

The 5th and part of the 6th labial are below the orbit, both are nearly equal in size; the median pair of the enlarged preanals is sometimes (though

rarely) united into one large shield. The hand has no tubercles on the extreme inner edge, and the sole is only partially tubercular, being generally smooth all along the bases of the 3rd and 4th toes; there are 17-22 sharp tubercles on the 4th free toe.

I have examined specimens from the Andamans,* Moulmein, various parts of Pegu, Asam, Sikkim and from the Parisnath hill in W. Bengal. The Moulmein specimens are the largest, attaining 7 inches; next come those from Asam and the base of the Sikkim hills, just above the Terrai at Pankabari: specimens collected at greater elevations, as for instance those about Darjiling (7-8000 feet) very rarely appear to attain 6 inches in length, and on the Parisnath I did not get (in April) a single specimen above 5 inches. All from the latter locality are, above, distinctly bronze brown, while those from the Himalayas are generally somewhat olivaceous or, when young, with greenish metallic lustre; they also often have the back much spotted with blackish, and the sutures between the head shields are more or less black, but in every point of structure the two forms are identical.

In all the specimens, I saw, the fore foot when laid forward, reached beyond the eye, but never to the front of the rostral. The fifth or last supraciliary is the smallest, but rarely united with the fourth, which is then followed by one or two small shields. The number of transverse rows of scales on the side of the body between fore and hind limb varies from 80 to 95, but the number of scales in one row at the edge of the belly is only about 60.

HINULIA DUSSUMIERII, Dum. and Bib.

Pl. iv, fig. 3, 3a, side and upper views of the head; 3b, sole of left hind limb.

Lygosoma Dussumieri, D. and B., *Erpet. Gen.*, v, p. 725.

Eumeces Dussumieri, apud Beddome, *Madras Journ. Mod. Sc.* for 1870.

I am indebted for a specimen of this very rare species† to Major Beddome, who obtained it in Malabar, where also the original specimens have been procured by Mr. Dussumier. As the species is rare, a slightly verbal alteration of Major Beddome's description may not be out of place.

Head conical, depressed above; body high, roundly subquadrangular; tail much longer than the body, gradually tapering to a point. The fore leg, when laid forward reaches to the tip of the snout, and the hind leg ex-

* One of the two specimens, noted by Theobald in *Cat. Rept. Asiat. Soc. Museum*, 1868, p. 25 (letter *b*) as coming from the Andamans is an *Euprepes* which, if not identical with Steindachner's *E. moerhousii*, from the Nicobars, belongs to a new species. Scales in 30 longitudinal series, each sharply three-keeled; supranasals not quite in contact, frontal forms a broad suture with vertical, occipitals as usually distributed; lower eyelid scaly, but the scales are rather larger in the middle; greenish olive above; ear large with scarcely any projecting denticles in front; sides blackish, below white.

† In the specimen described by Major Beddome the first and second supra-orbitals appear to have been united.

tends with half of the fourth toe beyond the shoulder. Rostral large, reaching far backward, and flat above; anterior frontal above broadly truncate, but very narrowly behind, the two posterior frontals nearly meeting; vertical very narrowly in contact with the anterior frontal, and much contracted and elongated posteriorly; supraorbitals 5, much swollen, the last followed below by two small shields; interorbital space very narrow; a pair of anterior occipitals, narrowed in front, broad behind; median occipital obtusely pointed in front, acutely behind, and in size subequal to one of the anterior occipitals; posterior occipitals larger, meeting behind with a narrow suture, in front in contact with the anterior occipital, the fifth supraorbital, and a small shield following it; shields on the side of the head regular; 8 upper and 7 lower labials, the last very small; first chin-shield single, second in a pair, forming a suture, followed by 3 other separate and widely diverging pairs; opening of the ear a long vertical slit, not denticulate in front; 40-42 longitudinal rows of scales round the middle of the body, those on the sides considerably smaller than on the belly;* about 76 transverse series on the side between fore and hind-limb, but only 66 on the edge of the belly; preanal scales moderately enlarged; of the subcaudals there are very few in front enlarged, but near the middle and posteriorly all; palm nearly entirely covered with tubercles, sole only at the bases of the 1st and 5th toes, and on the posterior edge, the remainder being smooth; about 23 sharpened tubercles under the free portion of the fourth toe.

Colour, above, fulvous, tinged olive in front and reddish posteriorly, with two longitudinal, submarginal, black bands, partially or entirely broken up into spots and becoming obsolete on the tail, which is red; along the edges of the back runs a metallic greenish white line, originating on the supraciliary edge; it is most distinct on the neck, but gradually disappears on the tail. A pure black band originates at the nasal, continues through the eye along the upper side of the body, and on the tail, disappearing towards its termination; the black band is bordered below by a narrower white band, which originates below the eye, passes through the lower part of the ear to the loin, and is below, particularly at the side of the vent, again bordered with black. Legs above olive brown with darker marblings and indistinct fulvous spots; tips of toes dark. Below, uniform greenish iridescent white; tail red.

Total length 4.75 inches, body 1.87, tail 2.87 inch. In general structure of the scales, the flattened upper rostral, tumid supraorbitals, narrow vertical, imperfectly tubercular soles, and in general style of coloration, the Malabar form agrees with the Bengal *maculata*, but the limbs are longer in proportion, and the details of coloration considerably different. The black band is at the side of the body broader, and the white one, bordering it below, originates in the present species below the eye and passes through the lower angle of the opening of the ear, while in *maculata* it begins almost behind the eye and

* This is also the case in *H. maculata*.

passes through the upper edge of the ear; the number of longitudinal rows of scales also appears to be slightly larger in the present species.

MOCOA SIKKIMENSIS, Blyth.

Pl. v, figs. 2, 2a, side and upper views of the head; three times the natural size.

Journ. Asiat. Soc. Bengal, 1854, xxii, p. 652.

Body slender, head short, obtuse and rather flattened above; no supranasals; lower eyelid with a transparent disk in the middle. Shields of the head regular, anterior frontal in contact with the rostral and vertical, which is much attenuated posteriorly; posterior frontals small, and not in contact, unless exceptionally; 4 supraciliaries; posterior pair of occipitals about twice the size of the anterior, middle shield small, shaped like the vertical, but shorter; 3 to 4 pairs of elongate transverse shields behind the occipitals; 2 loreals and 2 pre-oculars, each pair sometimes united into one vertically, or horizontally, elongated shield; 7 upper labials followed by two smaller shields, the 5th under the orbit, but not much elongated; 8 lower labials, the last smallest; anterior chin-shields enlarged; ear small rounded, generally with 2 or 3 small projecting shields on the front-, and a few still smaller lobules on the hinder, edge. Scales generally in 24 longitudinal series, and in 46 transverse series between fore and hind-limb; these numbers vary very little; young specimens have occasionally only 44, but the largest never appear to have more than 48, transverse series. A pair of large preanals. Subcaudals also enlarged, except the first few. The fore foot reaches to the anterior angle of the orbit, when laid forward, and the hind foot is three fifth the distance between fore and hind-limb. Palm and sole tubercular; fourth finger barely longer than the third; fourth toe nearly a quarter longer than the third.

Colour, above, bronze brown, (sometimes with an olive tinge and a metallic lustre during life,) uniform, or with three to five irregular series of small dark brown dots, the centre ones often arranged into dark lines; sides darker, near the back more or less blackish brown, commencing with a dark band at the rostral shield. Above, at the edges of the back, the black is margined by a somewhat indistinct pale line or band, occasionally dissolved into more or less confluent white spots; below, there is also an indistinct pale, undulating, band, passing from the ear to near the loin; the upper portion of the sides is less, the lower more numerous, spotted with white; the brown, as well as the somewhat indistinct whitish, spots extend on to the sides of the tail. Upper labials whitish, spotted with brown. Chin uniform greenish white in young, spotted with greenish dusky in older specimens. Vent below greenish white, on the posterior part, but especially between the femora and below the tail, reddish, this colour being more or less bright according to sex and season. The brown spots on the back are very variable, both in number and distinct-

ness. Young specimens generally have a distinct greenish metallic tinge on the whole body.

Largest specimen measures 5.25 inches, of which the body is 2", or a little less; some specimens have a stouter tail than others.

Hab. Sikkim, at elevations of from 3,000 to 10,000 feet; generally found between large stones in places exposed to the sun.

Jerdon* says that Günther's *Eumeces Himalayanus*† is identical with *Sikkimensis*, which latter Günther quoted as doubtfully belonging to *Hinulia indica*.‡ Dr. Anderson (Proc. Zool. Soc. 1871, p. 155) also says, that the Sikkim form "agrees in its transparent eyelid and all its other details with Günther's *Eum. himalayanus*;" he has, however, I believe, never seen an example of the true *Mocoo Himalayana* of Günther. I have specimens of the latter from Simla and the hills to the West, and I find that although they closely resemble *Sikkimensis*, they are nearly as well distinguishable, as are *Hin. indica* and *maculata*. Among five specimens of *Himalayana* only one has 26 longitudinal rows of scales, the four other specimens have each 28 longitudinal rows; there are 18 to 20 transverse rows between fore and hind limb, but only 42 to 44 scales in a row along the edge of the belly. On the back there are, as in *Sikkimensis*, only 4 longitudinal rows, but at the sides and below the scales of *Himalayana* are decidedly smaller. Other differences are: the limbs, though not longer than in *Sikkimensis*, are in *Himalayana* somewhat more slender, the transparent disk on the eyelid is larger, the ear-opening is also larger and with much more distinct lobules in front, the posterior frontals are more developed, almost meeting the anterior frontal and the vertical in a point, as stated by Dr. Günther, while in *Sikkimensis* the two posterior frontals always remain well separated.

The colour of *Himalayana* is, as described by Günther, above, greenish olive (not bronze brown, or only tinged with olive, as in *Sikkimensis*), with a few interrupted series of dark and whitish dots; a blackish band commences at the nasal and continues through the eye along the upper side of the body to near the tip of the tail, it is either uniform or with a few white spots, and on the tail it becomes generally less distinct. At the edge of the back the black band is margined by a white line, (most distinct on the neck), and below by a much broader white band, commencing at the lower edge of the orbit and terminating at the hind limb. Below this white band the sides are mottled or speckled with dark. The lower surface is uniform greenish white; tail reddish below (seasonal). All this strongly contrasts with specimens of *Sikkimensis* of which I collected a very large number of specimens in Sikkim. I do not wish to say that the two forms may not be shown to represent mere varieties of

* Proc. Asiat. Soc. for February 1870, p. 73.

† Reptiles of India, p. 86.

‡ Ibidem, p. 89.

one type species, but unless direct transitions, or transmutations, from one form into the other had been proved by observations, we have no right to ignore the distinctions which had been pointed out, and which do in reality exist.

M. Sikkimensis appears to be, however, more closely related to *Mococa Schlegelii*, Günther (l. c., p. 86), which also has been described from a Sikkim specimen. In size, form and general structure there does not appear to be a great difference between the two; the number of longitudinal rows of scales round the body is given as 25, and that between the axil and groin as 35, the latter number is, however, too small for *Sikkimensis*. The colour of *Schlegelii* is said to be black above, blackish below, which I certainly never observed among a few hundreds of *Sikkimensis*.

MOCOA SACRA, n. sp.*

Pl. iv, fig. 4, side view of the animal, natural size; 4a, 4b, 4c, upper, side, and lower views of the head and neck, enlarged.

Habit slender, head somewhat depressed, obtuse in front, body shorter than the tail, the latter gradually tapering to a point. No supranasals, eyelid with a perfectly transparent disc; scales in 22 longitudinal series round the middle of the body, and in 40 transverse series between fore and hind-limb. Head shields regular, like in *Sikkimensis*, but the postnasal scarcely reaches the top of head, and the fifth upper labial is comparatively longer than in that species. A few enlarged scales behind the occipitals. Subcaudals single, enlarged, except the two first pairs. A pair of large preanals. Ear in front denticulated with three equal lobules.

Total length 3.37 inches of which the tail is 2"; feet slender; the fore foot reaches to the middle of the eye, when laid forward, the 3rd and 4th fingers are equal or subequal; the hind foot is two-third the distance between fore and hind limb, or half that between the latter and the ear; the 4th toe is slightly longer than the 3rd.

Above, light iridescent bronze brown, with a few dark brown spots scattered on the head and body, each of these dark spots being accompanied by an indistinct pale spot, on both, or only on one side; a narrow black band from the rostral through the eye, passing above the ear and becoming indistinct on the sides of the belly; a white band below the black, best marked through the ear and above the fore foot, but becoming also indistinct on the belly where a few whitish spots separate the lower light from the upper darker parts; labials somewhat spotted with dark; chin white; breast and belly, below, greenish iridescent white; femoral region and tail below pale vermillion, that colour passing also on the sides of the tail, where only a few indistinct pale spots exist.

This species is very closely allied to *Sikkimensis*, differing from it by its more slender and comparatively longer hind feet, smaller number of

* See Proc. A. S. B., September 1871, p. 195.

longitudinal rows of scales, those on the vent being decidedly more transversely elongated, than in the Himalayan form; further in the more elongated 5th upper labial, few enlarged shields behind the occipitals, and by the subcaudals being enlarged almost from the beginning. There is also a slight difference in coloration.

Hab. Parasnáth hill in West Bengal. The only specimen was obtained near one of the Jain shrines on the top of the hill.

RISTELLA, Gray.

Ann. and Mag. Nat. Hist., Ser. I, 1839, p. 333.

Cat. Lizards B. M., 1845, pp. 71 and 85.

Body and tail elongate, subcylindrical; limbs four, feeble, anterior with 4, posterior with 5 toes, thumb and inner toe shortest; all toes provided with retractile claws, lying between two terminal enlarged shields; head shields regular; nostril in a single lateral shield; supranasals none; lower eyelid scaly; ear opening small; scales of body keeled or nearly smooth; gape situated far backward; palate toothless; teeth of the jaws small, equal, numerous, compressed.

This generic character has been derived from a specimen, kindly sent to me by Major Beddome; it belongs, I believe, to a genus which was originally established by Gray for a North Indian specimen, *Ristella Rurkii* (l. cit. p. 86), but the species appears to be different; at least it is impossible to identify both from the short description given of *R. Rurkii*, and it is not noted in Günther's Reptiles of India.

The 4 anterior toes and the retractile claws are important distinctions of the genus which must be classed next to *Heteropus*.

RISTELLA TRAVANCORICA* Beddome.

Atenchosaurus Travancoricus, Beddome, Madras Journ. Med. Sc., 1870, p. 33.

Pl. iv, fig. 5, upper view of the animal, natural size; 5a, 5b, 5c, upper, side and lower views of the head, enlarged; 5d, inner view of hand with the claws retracted, 5e, sole with the claws drawn out.

Body very elongate, subcylindrical, but somewhat depressed; muzzle short, obtuse, tail considerably longer than the body and very gradually tapering. Rostral convex in front, reaching to the upper surface of the head; one large prefrontal, two small posterior frontals, widely separated; the vertical forms a broad suture with anti-frontal and is posteriorly much elongate; four or five supraciliaries, slightly elevated, the first shield largest, but it is sometimes divided in two, last shield smallest; five occipitals, the two anterior and the median one subequal, the posterior pair larger, and the adjoining scales are

* *R. malabaricus*, (olim), Proc. A. S. B., 1871, p. 195.—Since my description of this species was drawn up, I observe that Major Beddome redescribed the species, in Mad. Med. Journal for 1871, also under the name *Ristella*, which name I had pointed out to him.

slightly larger than the rest on neck. Nasal shield moderate, pierced nearly in the middle by the nostril; one loreal, one preocular separated from the angle of the eye by a few minute shields; 3 or 4 small shields at the hinder angle of the eye, followed by regular scales. Upper labials 6, the eye above the 3rd and 4th; lower labials 5, narrow but long; lower rostral large, followed by one single and 3 pairs of enlarged chin shields. Scales on neck smooth, on body slightly two-keeled, round the middle of body in 26 longitudinal rows, there being 6 rows on the back, exclusive one row on either edge; on the belly there are also 6 rows, the scales being slightly larger than those of the back; 35 transverse rows between fore and hind limb; the two median preanal shields somewhat larger than the others; subcaudals not very conspicuously enlarged, (but they are generally enlarged in this group of SCINCIDÆ when the tail has been reproduced). The fore limb, when laid forward, reaches to the angle of the mouth, and the length of the hind limb is equal to half the distance between axil and groin. Total length of specimen 3.62 inches, head and body being 1.5 inches.

General colour, above, dark fulvous brown, each of the scales in the 6 dorsal rows with a median black streak, forming black longitudinal lines, continued on the tail; edge of back a little more distinctly fulvous brown, sides blackish with small white spots; below, yellowish white, spotted with black on chin and throat; tail below variegated with black and yellowish white, (during life probably reddish).

Hab. According to Major Beddome, common in moist jungles of the Western Ghats between 2000 and 5000 feet elevation.

RIOPA ANGUINA, Theobald.

Pl. v. fig. 4, animal, natural size; 4a, 4b, 4c, top, side and lower views of the head, enlarged; 4d, upper side of hand; 4e, inner side of foot.

Theobald, Journal Linn. Soc., Zool. vol. x, p. 27.

Anderson, Proc. Zool. Lond. 1871, p. 159 (in part).

RIOPA CYANELLA, n. sp.

Pl. v, fig. 3, 3a—3e, exactly corresponding figures with 4, 4a—4e.

? *Riopa Bowringi* apud Theobald, Linn. Soc. Journ., Zool. x, p. 26.

Riopa anguina, apud Anderson, P. Z. S., p. 159, (in part).

Theobald's description of *R. anguina* is somewhat incomplete. Dr. Anderson having kindly shown me the specimens in the Museum, I found that they belong to two distinct species, and that his description, as regards coloration at least, partly refers to *anguina*, partly to *cyanella*. In order to prevent misapprehension I give a brief description of the characters of both, and add a figure of each species.

R. anguina. Body elongate, subcylindrical, slightly depressed; head conical, rather short; supranasals in contact behind the rostral; anterior

frontal in contact with the vertical which is rather narrow, and barely reaches beyond a straight line connecting the middle of the orbits; four supraciliaries followed by a small shield; anterior pair of occipitals nearly equal to,* or only slightly larger than, the median occipital shield, the former narrower in front, the latter attenuate behind; posterior occipitals elongate, each being anteriorly in contact with the 4th supraciliary and the small shield following it, or sometimes it also touches an additional small shield placed obliquely behind that small posterior supraorbital; two scales, touching on each side the posterior occipitals, are enlarged; other head shields regular, as usual in *Riopa*, (they are indicated in the figure). The upper labials are sometimes 8 instead of 7, the 3rd or 4th being occasionally divided. Lower eyelid with a large translucent shield. Ear small, sometimes one or the other of the front scales slightly projects in the space. Scales in 22 longitudinal rows round the middle of the body, those on the lower side scarcely larger than those on the back; the two median preanal shields are only very little larger than those superseding them; 65-70 transverse rows between fore and hind-limbs.

Limbs very short and rather stout, with very short toes and distinct claws; palm and sole coarsely granular. The fore limb when laid forward does not reach the ear, and is only a little longer than the lateral gape of the mouth. The hind-limb equals the distance between the ear and the tip of snout, or it is a trifle longer.

Colour, above, uniform brown or greyish brown, pale at the sides, and whitish or brownish white below, the brownish or yellowish tint being especially conspicuous on the lower side of the tail. There is no lateral streak at the side of the body, but the sutures between the dorsal scales are in young specimens conspicuously darker than the rest, and form longitudinal dark lines, which in mature specimens become indistinct, or obsolete. In some specimens there is also a transverse, submarginal, dark line to each scale.

Usual size about 4 inches, of which the tail is generally somewhat less than one half. Length of head and body of the largest (figured) specimen 2.25 inches.

Hab. Pegu, British Barma.

Riopa cyanella. Body slender, with a conical head. Head-shields quite similar to those of the last species, but the vertical is somewhat longer and more slender; the median occipital is conspicuously smaller than one of the anterior pair; scales adjoining the posterior occipitals moderately enlarged. Lower eyelid with a translucent large shield. Opening of the ear small, a front scale very little projecting into the space. Scales of body in 22 longitudinal rows, 60-64 transverse rows between fore and hind limb; preanals scarcely larger than the preceding scales. Limbs of moderate

* Theobald in his original description rightly places particular stress upon this character.

length and slender. The fore-limb, when laid forward, nearly or fully reaches the opening of the ear, and is only a little shorter than the distance between the snout and the ear; the hind limb is less than half the distance between the axil and loin, and it barely exceeds the distance between the fore limb and the anterior angle of the eye.

Colour, above, olive brown, with an iridescent blue tinge, purer brownish on the tail, pale brownish olive at the side of the body; each scale, above and at the sides, is indistinctly mottled with dark, and there are generally a few white spots on the side of the neck and about the shoulder; a narrow white, slightly black margined band rises from behind the orbit and continues on each side of the back; it becomes indistinct in the middle of the body, but is again slightly more conspicuous above the hip, gradually disappearing on the tail, which is indistinctly speckled with dark brown at the sides; limbs above with longitudinal, broken up, dark lines; chin and anterior neck below yellowish, vent whitish; tail below brownish white.

This description is drawn up from a specimen which was presented to the Indian Museum by Mr. W. Theobald, and is not unlikely the same which he in his Catalogue of Burmese Reptiles noticed under the name of *R. Bowringi*. The greater length of the limbs and the coloration readily distinguish this from the preceding species.

Hab. Pegu; British Barma.

RIOPA ALBOPUNCTATA, (I. R., p. 92).

Pl. v, fig. 6, 6a, upper and side views of head, enlarged.

RIOPA HARDWICKII, (I. R., p. 92).

Pl. v, fig. 5, 5a, same views as in figure 6.

RIOPA PUNCTATA, (I. R. p. 93).

The differences in structure between these three species are very few. In the first and third the vertical and the median occipital shield are comparatively narrower and longer, than in the second.

In *R. albopunctata* the scales of the body are slightly smaller and more quadrangular, the number of longitudinal rows varies between 26 and 28, (the two numbers being almost equally common, at least in Bengal specimens), the transverse rows between fore and hind limb vary between 50-60, 56 being the most usual number, as stated by Günther. The fore leg reaches, when laid forward, to the front edge of the ear, or a little beyond it, rarely to the angle of the mouth; the length of the hind leg is generally a little less than $\frac{1}{4}$ th of the body, rarely exactly $\frac{1}{4}$ th.

In *R. Hardwickii* all the scales are somewhat larger and more transversely elongate, the number of longitudinal rows varies between 24 and 26, both being almost equally common; the transverse rows between fore and hind limbs vary between 48 and 56, 53 being the most usual

number; the fore leg extends generally somewhat beyond the ear, and often as far as the angle of the mouth, but very rarely beyond it; the hind leg is generally somewhat more than one fourth the length of the body.

In the form, greater or lesser thickness, and in the length of the body and of the tail, the two first mentioned species are identical, and equally variable; both have in front of the ear two lobules, the upper of which is the larger one, while the lower becomes occasionally obsolete. Both species also have the shields on the preanal edge slightly larger than those above them, and both have the lower eyelid covered with enlarged shields, but in the former the centre large shield is opaque, and generally broken up in two or three smaller ones, while in the latter it always remains entire, but it is generally only in young specimens perfectly transparent. The usual size of either species is a little above 4 inches, the tail if normal being about equal to the length of the body, but often it is reproduced, becoming thinner, or thicker, and shorter, and with the subcaudals often somewhat enlarged. The coloration is generally tolerably distinct in the two species.

In *albopunctata* of South India the back is often uniform brown; in Bengal specimens, each of the six median rows of scales of the back has a black dot, forming longitudinal lines and continuing on the tail, the extreme edges of the upper back are sometimes pale coloured, and some varieties of this type occasionally very much resemble those of *Hardwickii*; sides purplish black, spotted with white; lower side of the tail uniform white, like the vent, or more often each scale with a blackish dot. Legs above black spotted.—This species extends from South India through Central India, the whole of Bengal, into N.-Eastern Asam, and westwards into Pégú. At Calcutta it is very common during the winter months, but I have seen extremely few specimens in the time between May and the end of the rainy season.

R. Hardwickii is more variable in colour. The back and sides of the body are sometimes entirely purplish black; the edges of the upper back from the nostril, and the whole of the lower side purely white, tail vermilion in young, pale brownish above, white below, in older specimens. Other specimens, particularly those from Northern India, (about Agra and northwards towards the base of the Himalayas), have the four median rows of dorsal scales each with a large blackish spot, or rather the spots are generally situated on the suture between each two scales, and the scales in the two middle rows have their lower margins apparently serrated; the upper edges of the back have the usual white or yellowish bands; the sides are above purplish black, further down paler and each scale has a black spot; white dots occur either over the entire side, or only on the anterior half, or they are restricted to the side of the neck; vent always uniform white; tail with a black spot to each scale, sometimes absent on the lower side, its general colour fleshy. The reddish or purplish tinge is gradually lost in spirit.—This species is found in South India,* extending

* According to Blyth also in Ceylon,

through Central India northwards as far as Rurki and Hardwár, and eastwards as far as Calcutta, but it is very rare here. I have only within the last year obtained two specimens on the western side of the Hughli river at Howrah, but do not know of any record of the species eastward of the Hughli, that is even in Calcutta itself.

A third species which I have to notice is Linné's *R. punctata* from South India and the Dakhin (Dekhan). The structure and colour of this closely corresponds with that of *albopunctata* from Bengal, but the difference in size is very great, the former often attaining 12 inches. The number of scales round the body is usually 24, and those between fore and hind limb 78–84. Colour, brown above and at the sides, pale below, all scales with blackish, and the anterior half of sides with white, spots.

At Matheran near Bombay (about 2500 feet on the trappean plateau) I have met with a peculiar form, which might be looked upon as a hybrid or a transitional form, between *R. albo punctata* and *R. Hardwickii*. The form of the body, its structure, proportions of the limbs and the posteriorly narrowed vertical shield best agrees with *punctata*, as described. The largest specimen measures only $7\frac{1}{2}$ inches, the body being $3\frac{1}{2}$ inches. Of eight specimens examined, all have 26 longitudinal rows of scales, a number tolerably common in *Hardwickii*, but rarely to be met with in typical *punctata*. There are 74–80 transverse rows of scales between the limbs, agreeing with *punctata*. The colouration is exactly the same as in a pale *R. Hardwickii*: above and at the sides more or less dark brown, a pale brown or yellowish band on each side from the snout to the base of the tail, anterior half of sides of body with white dots; below whitish; all scales have blackish spots which sometimes become obsolete on the lower side. It is really difficult to decide to which species this particular form, which I have just noticed, should be referred. The structure and form of the body agrees best with *punctata*, while the colouration is that of *Hardwickii*, and the size is intermediate between both. To consider the Matheran form as an independent species, seems to me quite unnatural; it is certainly nothing else than a local variety, and most probably the same which Jerdon notices as *R. Hardwickii* from the Carnatic, '9 inches' long (J. A. S. B., xxii, p. 478). The question to be answered is: do we know the young *punctata* in all its progressive stages up to the adult? I got the adult from Púna, and with it one younger specimen which has the general colouration of *Hardwickii*, the body is 2.6 inches, greater than in any known *Hardwickii* from the N. West or Central Provinces, tail reproduced, short, 24 longitudinal rows round the body, and 80 transverse rows of scales between the limbs. If we have to look upon this specimen as the young of *punctata*, what I do not doubt it really is, and take into consideration what I said about true *Hardwickii* and the Matheran form, the only reasonable conclusion we can draw is, that *punctata* and *Hardwickii* are actually only one species which

attains its greatest size and development on the Ghâts of South India, and gradually diminishes in size as it extends further north, and into the plains. Careful observations of the younger stages of *punctata* must settle this presently doubtful point, but it is one of extreme interest for the study of the development of our Indian fauna.

CHAMÆLLA LINEATA, GRAY.

Gray, Cat. Lizards B. R., p 97.—Günther, I. R., p. 95.

I obtained an adult specimen* of this very rare form near Púna (Dak-hin), on the sandy banks of the river between shrubs.

Body very slender and long, muzzle moderately obtuse, head flattened above. Rostral shield broader than high, slightly reaching to the top of head. Anterior frontal large, single; posterior frontals small, separate: vertical small, in contact with anterior frontal, angular in front, obtusely rounded (sub-elliptically) behind; supraciliaries four; anterior occipitals united into one obtusely triangular shield, median occipital small, pointed behind and the posterior occipitals elongate, forming a suture posteriorly. Nostrils lateral, in a single elongate shield; supranasals narrow, separated by the anterior frontal which is in contact with the rostral. Two loreals. Lower eyelid transparent. Seven upper labials, fifth largest and under the orbit; six lower labials. Ear small, with smooth edges. Scales perfectly smooth, shining, in 22 longitudinal rows round the middle of the body, and in 82-84 transverse series between the limbs; preanals and subcaudals not perceptibly enlarged. Limbs very short, each with four toes, the inner toes on both very small, the fourth toe on the fore-limb is only a little longer than the second and sensibly shorter than the fourth; on the hind-limb the third is very little longer than the fourth. When laid forward the anterior limb does not reach the ear, and the hind-limb is equal to one sixth the length between it and the fore-limb.

Colour, above, iridescent bright golden brown, sides paler with a greenish tinge, lower side whitish; all scales with blackish median spots, forming continuous lines above, but they are slightly more interrupted at the sides and on the belly, and are least distinct on the throat; head shields marbled with dark; edge of lips yellowish; limbs and tail similarly striped as the body.

Gray's characteristic of the genus is excellent, with the exception that the contiguity of the supranasals cannot be considerate of generic value. My specimen measures 4·3 inches, body 2· (head alone 0·2), tail 2·2, reproduced towards the tip; fore-limb 0·2, hind-limb very nearly 0·3 inch.

* The only type specimen in the British Museum is a young one, and its proper locality was unknown.

ON THE OSTEOLOGY OF *TRILENOPS PERSICUS*,—by G. E. DOBSON, B. A.,
M. B., *Assistant Surgeon, H. M.'s British Forces.*

(With plate VI.)

[Received and read 6th March, 1872.]

The construction of the bony skeleton shows a closer relationship with *Phyllorhina* than expected by me, when writing my description of the genus, founded on the typical species of which I had not then obtained a perfect skeleton.

The genus is connected with *Phyllorhina*, principally, in the relative number and length of the bones of the fingers, supporting the wing membrane; in the relative number and length of the bones of the toes; in the shape of the iliac bones; and less markedly in the flattened form and vertical height of the nasal bones. In some other respects, especially in the form of the bones entering into the construction of the *basis cranii*, and in their foramina, its relations are more closely with *Rhinolophus*, while it differs from both genera, not less importantly, in some peculiarities of structure to be described hereafter.

I shall, therefore, in describing the bones of the skeleton compare them generally with those of the species of *Phyllorhina* and *Rhinolophus*, and particularly with those of *Ph. larvata*, Horsf., portions of the skeleton of which are figured in the accompanying plate for the purpose of comparison.

In its general outline the skull resembles that of *Phyllorhina* more closely than *Rhinolophus*, especially in the flattened form and less vertical height of the nasals, which are, however, relatively, much more developed laterally and vertically, than in the former genus. From both genera it differs remarkably in the form of the zygomata which are greatly compressed, and expanded in a vertical direction.

The superior margin of the zygoma rises vertically to a height of 0.15 inch immediately in front of the posterior origin of the arch, maintaining this height for more than two-thirds its length, then suddenly narrowing to half near its connection with the maxillary; the inferior margin is straight, and the intervening bony structure very thin and diaphanous. The zygomata are not curved outwards, as in *Phyllorhina* and *Rhinolophus*, and their flattened arches form straight lines with the sides of the maxillæ.

The *basis cranii* is much narrower than in *Phyllorhina*; the basi-occipital is less than half the width of that of *Ph. larvata*, the total lengths of the skulls being, respectively, 0.85 and 0.95 inches.

The following table of dimensions shows the principal measurements of the skulls in *Tr. persicus* and *Ph. larvata*:—

	<i>Tr. persicus</i> inches,	<i>Ph. larvata</i> inches,
Extreme length of skull,.....	0.85	0.95
Breadth between upper margins of zygomata,	0.30	0.50
Breadth across nasal prominences,.....	0.28	0.28
Greatest vertical height of zygoma,	0.15	0.10
Length of zygoma,	0.18	0.23
Length of bony palate, laterally,	0.24	0.23
Width of basi-occipital between the cochleæ,...	0.04	0.10
Length of base of skull from posterior margin of palate to edge of foramen magnum,	0.37	0.43
Width of the base of the skull behind poste- rior roots of zygomata,	0.32	0.42

The auditory *bullæ osseæ* are very large and prominent; the cochleæ are deeply grooved externally by the intervals between the spiral chambers, contrasting with the smooth external surface of the much less prominent cochleæ of *Phyllorhina*, and resembling more closely the same parts in *Rhinolophus*.

The par-occipital processes are long and slender, club-shaped, narrow above, expanded beneath, directed downwards and slightly forwards, terminating in a small, acutely pointed projection directed forwards, supporting the inferior surface of the petro-mastoid. In *Phyllorhina* the par-occipital processes are very short and blunt; in *Rhinolophus* long and slender, directed downwards and forwards, slightly thickened beneath.

There is a minute precondyloid foramen on each side, and in front of, and external to it, a wide opening having for its anterior boundaries the petro-mastoid and cochlea—the jugular foramen. There is no distinct carotid foramen. In *Phyllorhina larvata* the precondyloid foramen is separated from the jugular opening by a considerable interval; the latter is small, circular, and occupies the angle between the petro-mastoid and cochlea.

The basi-sphenoid is perforated, posteriorly, in the middle line by an oval aperture, a defect of ossification, represented in *Phyllorhina* by a circular thinning of the roof of the *basis cranii* in the same situation. Between this aperture and the glenoid fossa is a circular opening, the foramen ovale, placed posterior and slightly external to the sphenoidal fissure. More posteriorly and externally, behind the glenoid fossa, separated from the petro-tympanic bulla by a narrow bony process, a large post-glenoid foramen exists, while immediately external to and above it the squamosal is perforated by a small venous canal directed upwards.

The roof of the meso-pterygoid fossa is pierced posteriorly by two small foramina placed one on each side of the middle line, and separated by an exceedingly narrow bony lamella, and similarly in front, near the junction

of the basi-sphenoid with the pre-sphenoid. The cribriform plate is perforated by two large triangular foramina separated by a narrow bony process.

The pterygoid plates are greatly expanded, forming broad, acutely pointed, triangular projections directed downwards and slightly outwards, giving width to the meso-ptyergoid fossa which quickly narrows as it proceeds backwards, exposing the wide sphenoidal fissures. Posteriorly its roof becomes continuous with the under surface of the *basis cranii*, as in *Phyllorhina*, its sides curve outwards, forming the posterior boundaries of the sphenoidal fissures which extend backwards as far as a line drawn between the glenoid fossæ. There is no distinct foramen rotundum.

In *Phyllorhina* the sphenoidal fissures are much narrower and shorter, terminating posteriorly at some distance in front of a line joining the glenoid fossæ. They are concealed in their whole extent by the lateral walls of the meso-ptyergoid fossa. The foramen rotundum is represented by a small aperture in front of, and internal to the foramen ovale which occupies the same position, relatively, as in *Triænops*. The post-glenoid foramen is small or absent. The meso-ptyergoid fossa maintains the same width from before backwards, or is slightly expanded posteriorly. About the middle its lateral walls develop small, acutely pointed, hamular processes, curved backwards.

In *Rhinolophus* the basi-occipital is extremely narrow between the auditory bullæ; the foramen rotundum is united, as in *Triænops*, with the sphenoidal fissure which extends as far backwards as in the latter genus; the meso-ptyergoid fossa is relatively wider anteriorly than in either *Phyllorhina* or *Triænops*, and conceals the narrow sphenoidal fissures to within a short distance of its termination where its sides suddenly narrow, disclosing the sphenoidal fissures posteriorly, and slightly further backwards curving outwards limit their posterior extent; its roof is traversed by a narrow groove terminating posteriorly in an excavation, thus differing from both *Phyllorhina* and *Triænops*.

The bony palate extends as far back as the middle of the last molar tooth; in *Phyllorhina*, it is limited by the posterior margin of the second molar.

The coronoid process of the mandible is very small, and in vertical height less than the canine tooth, thus resembling *Rhinolophus* more than *Phyllorhina*; the upper margin of the articular surface is level with the summits of the molar teeth, and the ramus is pierced immediately beneath and in front of the condyle by a large circular foramen directed upwards, and slightly outwards.*

* This infra-condyloid foramen of the mandible is probably unique in *Triænops*, in no other genus of *Rhinolophidae* have I found it, nor, so far as I can ascertain has such a foramen been discovered in any other species of *Chiroptera*.

In *Ph. larvata* the coronoid process of the mandible exceeds the canine tooth considerably in vertical extent, and the upper margin of the condyle is raised above the summits of the molar teeth.

The dental formula corresponds with that of *Phyllorhina*:—

In. $\frac{2}{4}$; c. $\frac{1-1}{1-1}$; p. m. $\frac{2-2}{2-2}$; m. $\frac{3-3}{3-3}$.

The upper incisors are deeply bilid, and, as in all genera of *Rhinolophidae*, minute, placed near each other in the centre of the space between the canines at the extremities of rudimentary premaxillæ suspended in the nasal cartilages. The upper canine has a well developed, acutely pointed talon behind, in front a raised ridge extending nearly half its vertical extent and terminating in a small blunt projection. The first upper premolar is minute with a slightly concave crown, it is placed outside the tooth-row; the last molar is considerably more developed than in *Phyllorhina* and resembles that of *Rhinolophus*, equalling, in the antero-posterior diameter of its crown, more than three-fourths the second premolar, while in *Ph. larvata*, *Ph. nobilis*, and other species of *Phyllorhina*, it is less than half.

In the lower jaw the incisors are deeply bilobed; a faint indication of a third lobe is discernible with the aid of a lens, on the outer side of the outer incisor.

The first premolar has the cingulum largely developed, expanded horizontally on all sides, and sending upwards, anteriorly and posteriorly a small process, so that the tooth appears, at first sight, tricuspidate. The posterior process is much more vertically extended than the anterior one.

The third molar equals the second in size, contrasting with the imperfectly developed last molar of *Phyllorhina*.

The manubrium sterni differs remarkably from that of *Ph. larvata* which may be taken as characteristic of the form of this bone in *Phyllorhina*. The lateral processes behind the sterno-clavicular articulation are triangular and acutely pointed, contrasting with the irregularly blunt processes of *Ph. larvata*; the carina is greatly developed, forming a deep, quadrilateral projection arising from the entire length of the bone. The second sternal bone is provided with a deep triangular projection, the anterior margin of which is separated from the posterior margin of the carina manubrii by a wide triangular space; behind, the projecting posterior angle conceals the junction of the third sternal bone. The third bone is small, narrow, and spine-like; its posterior extremity supports a thin, semicircular cartilage.

In *Phyllorhina* the carina manubrii is shallow, forming a slightly raised ridge for more than two-thirds its length; in the anterior third it is produced into a blunt spine. The second sternal bone develops a shallow keel along its entire length; the third bone is short, expanded laterally, terminating in a semicircular margin.*

* This is the most usual form of the sternum in insectivorous bats. (See Blainville, *Ostéographie*). The number of bones here given is the number of separable bones distinguishable in the sternum of an adult specimen.

The ribs are very much flattened and separated by very narrow intervals.

The ento-condyloid tuberosity of the humerus develops an exceedingly long styloid process, directed slightly upwards, contrasting with the similar, short, blunt process of *Phyllorhina*; the ecto-condyloid tuberosity is obsolete; the articular surface is marked with a very deep sigmoid notch.

The ulva is strongly curved backwards.

The bones of the fingers exhibit nearly the same relative proportions in length as in *Phyllorhina*. The terminal phalanx of the third finger only is bilid at the extremity, as in *Caelops Frithii*. From the proximal extremity of the same phalanx, close to the joint, on the under surface, and slightly to the outside, a process of bone, 0·15 inch long, arises, directed downwards, slightly forwards, and outwards.

The anterior portion of the ilium develops, at right angles to its inferior surface, a broad quadrilateral process of bone. The antero-inferior angle of this process is connected by a narrow bony isthmus with the ileo-pectineal spine, thus bridging over the space between, and forming the inferior boundary of a large oval opening, larger than the obturator foramen which is placed posterior to it, and, owing to the oblique position of the iliac bones, on a somewhat lower level. The rim of the pelvis thus forms a straight line from the pubic symphysis to the antero-inferior angle of the quadrilateral process on the anterior extremity of the ilium.

In *Ph. larvata*, and other species of *Phyllorhina*, the iliac bones develop very similar processes, but that rising from the antero-inferior surface of the ilium is much narrower, more of a triangular than of a quadrilateral shape, and directed downwards and slightly backwards; its antero-inferior angle is rounded off, and does not develop any spine, as in *Triænops*.

In *Rhinolophus* the *eminentia ileo-pectinea* develops a long, acutely pointed spine, not connected by bone with the antero-inferior surface of the ilium.

The fibula is complete as in other Rhinolophine bats. The toes are equal in length, each with two joints, as in *Phyllorhina* and *Caelops*.

The genera of *Rhinolophidæ* may be arranged, osteologically, under two subfamilies as follows:—

Subfam. I. RHINOLOPHINÆ.

Toes unequal; outer toe with two, remaining toes with three joints each; ileo-pectineal spine not connected by bone with the antero-inferior surface of the ilium.

Genus. 1. Rhinolophus.

Metacarpal bone of fourth finger exceeding that of second finger in

length; foramen rotundum united with sphenoidal fissure; roof of mesopterygoid fossa with a longitudinal groove terminating in an excavation posteriorly; basi-occipital between auditory bullæ very narrow, in most species linear; par-occipital processes slender, produced; antero-posterior diameter of last molar equal to more than three-fourths that of antepenultimate molar; premolars $\frac{2-2}{3-3}$.

Subfam. II. PHYLLORHININÆ.

Toes equal, with two joints each; ileo-pectineal spine united by bone with a process derived from antero-inferior surface of ilium.

Genus. 2. Phyllorhina.

Metacarpal bone of fourth finger less than that of second finger in length; foramen rotundum distinct; auditory bullæ separated by a broad basi-occipital; roof of mesopterygoid fossa continuous with under surface of the *basis cranii*, not grooved, nor perforated by foramina; par-occipital processes short, blunt; zygomata narrow, slightly expanded posteriorly, curved outwards; antero-posterior diameter of last molar less than half of the antepenultimate molar; premolars $\frac{2-2}{2-2}$, or $\frac{1-1}{2-2}$.

Genus. 3. Triænopis.

Metacarpal bone of fourth finger less than that of second finger in length; foramen rotundum united with sphenoidal fissure; basi-occipital between auditory bullæ narrow, not linear; roof of mesopterygoid fossa pierced by foramina, not grooved, continuous posteriorly with under surface of *basis cranii*; par-occipital processes long, slender; zygomata greatly expanded vertically, not curved outwards; last upper molar equal to three-fourths of the antepenultimate molar; mandible pierced by an infra-condyloid foramen; premolars $\frac{2-2}{2-2}$.

*Genus. 4. Calops.**

Metacarpal bone of index finger very long, extending beyond the first phalanx of the second finger; metacarpal bone of fourth finger exceeding that of second finger in length; basi-occipital broad between auditory bullæ; zygomata slender, curved outwards; last upper molar equal to three-fourths of the antepenultimate molar; tail very short or absent; premolars $\frac{2-2}{2-2}$.

Explanation of plate vi.

Figs. 1-9. *Triænopis persicus*, Dobson. 1. Side view of skull; 1a, base of skull; 1b, lower jaw; all enlarged double the natural size; 2, scapula, double size; 3, side view of thorax, showing the very prominent *carina sternalis*, enlarged double natural size; 4, 4a, distal extremity of humerus, enlarged four times the natural size; 5, third

* Type *Coleps Feithii*, Blyth, Journ. As. Soc. Bengal. Dr. W. Peters has noted the relations of this genus with *Phyllorhina* (See Monatsber. Berlin Akad., 1865, p 614, and also for 1871).

finger showing peculiar form of terminal phalanx, enlarged double natural size; 6, proximal third of forearm, enlarged double; 7, front view of pelvis; 8, side view of pelvis, both enlarged double; 9, tibia and fibula, enlarged double.

Figs. 10-14, *Phallochilus larevata*, Horsfield. 10, 10a, 10b, side and base of skull with lower jaw, all enlarged double natural size; 11, side view of thorax, double size; 12, 12a, distal extremity of humerus enlarged about three times the natural size; 13, proximal third of forearm, enlarged double; 14, side view of pubic and iliac bones, enlarged double.

THIRD LIST OF BIRDS OBTAINED IN THE KHASI AND GARO HILL RANGES,
WITH SOME CORRECTIONS AND ADDITIONS TO THE FORMER LISTS,—by
MAJOR H. H. GODWIN-AUSTEN, F. R. G. S., *Deputy Superintendent,*
Topographical Survey of India.

[Received 10th December, 1871.]

- 23.* *Micronisus badius*, Gmel. Foot of Garos.
- 211. *Chrysococcyx Hodgsoni*, Moore. Garo Hills.
- 234. *Arachnechthra asiatica*, L. Bologunj.
- 297. *Alseonax latirostris*, Raffles. Garo Hills.
- 304. *Cyornis rubiculoides*, Vigors.
- 312. *Muscicapula sapphira*, Tickell. Shoton Dorango Peak, Garo range.
- 318. *Siphia tricolor*, Hodg.
- 350. *Zoothera monticola*, Blyth.
- 358a. *Turdus dissimilis*, Blyth. *T. hortulorum* of Selater. Garo Hills.
- 399a. *Pellorneum palustre*, Jerdon, n. sp. Obtained in the beels between Bologunj and Chatak.
- 468. *Iora typhia*, Linn.
- 453. *Ixos tristis*, Blyth.
- 476. *Kittacincla macroura*, Gmel.
- 519. *Dumeticola affinis*, Hodg. Banks of Megna, Sylhet.
- 522. *Tribura luteoventris*, Hodg.
- 544. *Drymoipus longicaudatus*, Tickell.
- 547. *Suya criniger*, Hodg.
- 562. *Phylloscopus indicus*, Jerdon. Base of Garos.
- 594. *Budytes citreoloides*, Hodg.
- 693a. *Calornis affinis*, Walden.
- 704. *Estrela amandava*, Linn.
- 738. *Carpodacus erythrinus*, Pallas.
- 829. *Coturnix communis*, Bonaterre. Cherra Punji. October.
- 904. *Gallicrex cristatus*, Latham.

* Numbers same as in Jerdon's Birds of India.

941. *Threskiornis melanocephalus*, Linn. In this specimen all the quills are pure white. Shot in Mymensing in February.

The following alterations in nomenclature have to be made in my former papers.

358. *Turdus chrysolaus*, ♀ recorded as from Cherra Punji, proves, on further comparison, to be *Turdus pallens*, Pallas. *T. dissimilis*, Blyth, is very close to this last, but may be known at once by the very rich rufous colouring on the sides of the breast and lining of the wings, it also wants the pale supercilium of *T. pallens*. The bill is far stronger, of greater length, and pale yellow in colour.

396. *Timelia pileata*, Horsf., is the Java species, and our Indian bird differs somewhat. On comparing my specimens with the true *T. pileata* in Lord Walden's collection, the difference was at once apparent, a fact anticipated by Lord Walden at the time the comparison was made. I propose that our bird should be called *T. Bengalensis*. The Indian form differs from the Javanese, in the white on the forehead being larger, of darker brown on the head, the darker tint of the back, and decidedly darker hue of the tail. In size there is no perceptible difference. It is an interesting instance of a race changing on its extreme limits.

116a and 116b are both *Rhyticeros plicatus*; the first being the female, the second the male.

146c. *Anorhinus galeritus* Dr. Jerdon now pronounces to be a new species altogether, and he will describe it under the name of *A. Austeni*. I shot the bird in the N. Cachar Hills near Asalu.

141. *Hydrocissa coronata*, is *albistrois*, the large variety, named by Hutton *affinis*, from the Deyra Doon.

405, (in 2nd list of birds), *Pomatorhinus erythrogengys* should be *P. hypoleucos*, Blyth, originally described from Aracan.

231a. *Anthreptes?* is *Chalcoparia Singalensis*, Gmelin.

With reference to some notes on my first paper by Mr. A. O. Hume, where he says that 139, *Serilophus rubro-pagae* with the collar of shining white must be the other species *S. lunatus*, I must remark that my two specimens are identical in every point, only that one has the collar well developed, in the other it is scarcely perceptible. *S. lunatus* I never got, the points of difference between the two species are well marked especially in the outer tail feathers and general hue throughout the upper parts.

London, Novb. 1871.

ON DIFFERENTIAL GALVANOMETERS,

by LOUIS SCHWENDLER, *Esq.*

There is one very interesting question connected with the construction of these instruments which, as far as I know, has not yet been answered, and which is of sufficient practical importance to form the subject of an investigation.

This question may best be put as follows :

*A certain battery of given electromotive force and given internal resistance has to supply the two coils of any differential galvanometer with a current ; what must be the resistance of either coil in order to obtain the most delicate reading when measuring a given resistance ?**

The solution of this problem in its most general form would naturally be extremely intricate, and could not be effected without tedious calculation, but there is one special case where it is comparatively easy to determine the law which connects the resistance of the coils with the external resistances to be compared, in order to have the greatest sensitiveness of the instrument.

Suppose for instance that the two coils of a differential galvanometer have equal resistances and equal magnetic momenta, and further that the battery which supplies the two coils with current has an internal resistance sufficiently small to allow of its being neglected against the resistances to be compared. Then, on account of the battery resistance being so small, it follows that the current through one coil is entirely independent of the total resistance in the other, and as the two coils are supposed to have equal magnetic momenta and equal resistances, balance can only be established by the currents becoming equal, that is to say at or near balance each coil must receive a current

$$C = \frac{E}{g + w}$$

where g is the unknown resistance of either coil,

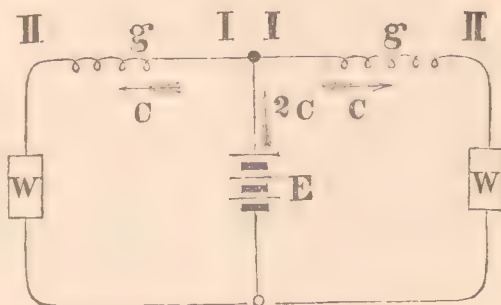
w the resistance to be measured, and which is supposed to be known, and E the given electromotive force of the testing battery.

At balance the diagram of this differential galvanometer is, therefore, represented by Fig. 1.

* In the Philosophical Magazine of May, 1866, and January, 1867, I solved a similar question, *viz.* the proper resistance of the galvanometer to be employed when testing by Wheatstone's balance, and the result of that investigation has led me to examine the present question.

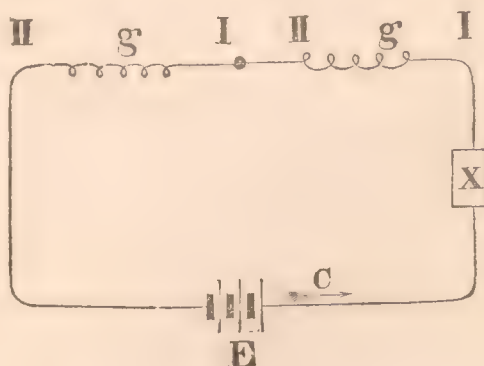
Fig. 1.

Now, as far as the magnetic effect of the two coils is concerned, we may substitute for the parallel circuit, Fig. 1, the simple circuit, Fig. 2, if we only reverse the magnetic action of one of the two coils, (say the right one).



(Fig. 2).

And in order to have, in this case, for the same electromotive force E the same current C flowing through the coils as before, (see Fig. 1), we must necessarily introduce a resistance x hence—



$$C = \frac{E}{g + w} = \frac{E}{2g + x}$$

$$\text{therefore } w = g + x \dots\dots\dots (I)$$

But to obtain the maximum magnetic effect in any single circuit (Fig. 2), it is necessary that the resistance of the coil should be equal to the total external resistance* and therefore in this case (Fig. 2)

$$x = 2g \dots\dots\dots (II)$$

Eliminating x from equation I and II we have

$$g = \frac{w}{3} \dots\dots\dots (I)$$

To obtain the most delicate reading with a differential galvanometer, the two coils of which have equal magnetic momenta, and also equal resistances,

* This law holds good,—as can easily be shown,—for any number of coils connected into a single circuit, no matter if the magnetic effects of these coils have the same or opposite sign with respect to a given magnetic point.

the resistance of each coil should always be the third part of the resistance to be measured.

This relation is so exceedingly simple that at first I thought it must be a well known one, and that I only was unacquainted with it. However, I have since carefully read the literature on the subject, and I find the above law nowhere stated, and as a further proof of its being new, I may add that none of the differential galvanometers with which I have had occasion to deal, fulfil it. That this relation is of the greatest importance in the construction of differential galvanometers cannot be doubted, and I have accordingly thought it worth while to bring my investigation before the Society.

Solution of the Problem in its most general form.

Fig. 3 gives the diagram of a differential galvanometer in its general form. w and w' are the two resistances to be compared and which we suppose to be given. E is the given electromotive force of the testing battery, and f the total resistance in the battery branch;— g and g' are the resistances of the two coils, and their values are to be determined under the condition that the reading, when near balance, is most delicate, *i. e.* that the slightest variation in w or w' causes the greatest possible variation in the deflection of the needle.

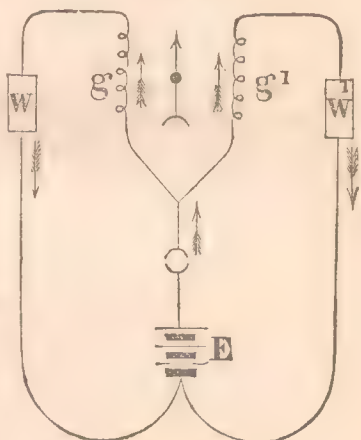
The magnetic moment of the coil g , when a current G passes through it, may be designated by Y , and the magnetic moment of the coil g' , when a current (G') passes through it, may be called Y' . Both these magnetic momenta are taken with respect to the same needle, or system of needles, and we may suppose that neither Y nor Y' alter perceptibly, when the needle, or system of needles, slightly alters its position towards the coils, which are supposed to be fixed. (This condition will be fulfilled as closely as possible near balance, when the needle is approximately always in the same position with respect to the coils, and it is only for such a case that the following investigation is of any practical interest).

According to the principle of the differential galvanometer, we have—

$$a^0 \propto Y - Y'$$

where a represents the deflection of the needle, before balance is arrived at,

Fig. 3.



and which may be positive, zero or negative, depending on the relative strength of the currents which at the time are acting through the coils, on the relative position of the needle towards the coils, and on the shape and size of the latter.

Approximately we have further

$$\begin{aligned} Y &= m \ U \ G \\ Y' &= m' \ U' \ G' \end{aligned}$$

U and U' being the number of convolutions in the coils g and g' respectively, and m, m' representing the magnetic momenta of an average convolution (one of mean size and mean distance from the needle) in the coils g and g' respectively, when a current of unit strength passes through them.

Further, as the space of each coil to be filled with wire of constant conductivity is given, we have—

$$\begin{aligned} U &= n \sqrt{g} \\ U' &= n' \sqrt{g'} \end{aligned}$$

as can be easily proved.

n and n' are quantities independent of g and g' , so long as it may be allowed to neglect the thickness of the insulating covering of the wire against its diameter, which for brevity's sake we will suppose to be the case. With this reservation n and n' depend entirely on the size of the coils and on the manner of coiling.

Substituting these values, we get

$$a^0 \propto m \ n \ \sqrt{g} \ G - m' \ n' \ \sqrt{g'} \ G' \dots\dots\dots I$$

which general expression for the deflection we may write in two different forms either

$$a^0 \propto m \ n \ \sqrt{g} \left(G - \frac{m' \ n'}{m \ n} \frac{\sqrt{g'}}{\sqrt{g}} G' \right) \dots\dots\dots I$$

or

$$a^0 \propto m' \ n' \ \sqrt{g'} \left(\frac{m \ n}{m' \ n'} \frac{\sqrt{g}}{\sqrt{g'}} G - G' \right) \dots\dots\dots I'$$

which means that any deflections observed may be naturally considered due to either coil. In the first form (equation I) it is considered due to the coil g , when a current $G - \frac{m' \ n'}{m \ n} \frac{\sqrt{g'}}{\sqrt{g}} G'$ flows through it, in the latter form (equation I') it is considered due to the coil g' , when a current $\frac{m \ n}{m' \ n'} \frac{\sqrt{g}}{\sqrt{g'}} G - G'$ flows through it.

Now considering that the same battery E has to supply the current to both the coils we have

$$G = E \frac{g' + w'}{N}$$

$$\text{and } G' = E \frac{g + w}{N}$$

where $N = (g + w)(g' + w') + f(g + w + g' + w')$.

Thus substituting in I and I' we get either

$$a^{\circ} \propto m n E \frac{\sqrt{g}}{N} \left(\overbrace{g' + w' - \frac{m' n'}{m n} \frac{\sqrt{g'}}{\sqrt{g}} (g + w)}^{\Delta} \right) \dots\dots\dots \text{I}$$

$$\text{or } a^{\circ} \propto m' n' E \frac{\sqrt{g'}}{N} \left(\overbrace{(g' + w') \frac{m n}{m' n'} \frac{\sqrt{g}}{\sqrt{g'}} - (g + w)}^{\Delta'} \right) \dots\dots\dots \text{I'}$$

and either Δ or Δ' is the factor which at balance becomes zero.

The coefficient $\frac{m' n'}{m n} \frac{\sqrt{g'}}{\sqrt{g}}$ means, therefore, nothing else than what is generally called the constant of the differential galvanometer, *i. e.*, the number by which the total resistance in one branch of the differential galvanometer has to be multiplied, in order to obtain the total resistance in the other branch, when balance is established. This constant of the differential galvanometer is a given function of g and g' , the resistance of the coils, and as g and g' are to be determined, by being variable, it cannot be considered a constant in this investigation. But the factor $\frac{m' n'}{m n}$ is entirely independent of any of the resistances, it represents what may appropriately be called the 'mechanical arrangement' of the differential galvanometer, and may be designated by p . It must be borne in mind that p represents an absolute number, which theoretically may be anything with the exception of 0 and ∞ . If p has a value equal to either of these two limits, the instrument would be a simple galvanometer with a shunt, and not a differential galvanometer.

The deflection a may now be written more simply, as follows:—

$$a^{\circ} \propto K \frac{\sqrt{g}}{N} \left(\overbrace{g' + w' - p \frac{\sqrt{g'}}{\sqrt{g}} (g + w)}^{\Delta} \right) = K \frac{\sqrt{g}}{N} \Delta \dots\dots\dots \text{I}$$

$$\text{or } a^{\circ} \propto K' \frac{\sqrt{g'}}{N} \left(\overbrace{\frac{g' + w'}{p} \frac{\sqrt{g}}{\sqrt{g'}} - (g + w)}^{\Delta'} \right) = K' \frac{\sqrt{g'}}{N} \Delta' \dots\dots\dots \text{I'}$$

K and K' being independent of g and g' , and also of w and w' .

N is a known function of all the resistances in the differential circuit.

Δ and Δ' are similar functions of g and g' , w and w' and which functions become both zero at balance.

For the further investigation, only one of the two possible expressions of a will be used, *viz.* equation I.

$$a^0 \propto K \frac{\sqrt{g}}{N} \Delta \dots\dots\dots \text{I}$$

Differentiating this expression with respect to w' , the external resistance belonging to the coil g' , we get

$$\frac{da}{dw'} = K \left\{ \frac{\sqrt{g}}{N} - \frac{\Delta R \sqrt{g}}{N^2} \right\}$$

$$\text{where } R = \frac{dN}{dw'}$$

or the variation of the deflection a , when w' varies, is

$$\delta a = K \left\{ \frac{\sqrt{g}}{N} - \frac{\Delta R \sqrt{g}}{N^2} \right\} dw' = K \phi dw'.$$

Now it is clear that the instrument is most sensitively constructed when, for the slightest variation in w' , the variation in a is greatest. This will be the case if the factor $\phi = \frac{\sqrt{g}}{N} - \frac{\Delta R \sqrt{g}}{N^2}$ is as great as possible. This factor ϕ is a known function of the resistances in the circuit, and as w and w' are given, ϕ can only be made a maximum with respect to g and g' , the resistances of the two coils.

Thus our physical problem is reduced to the following mathematical one:

A function ϕ containing two variables is to be made a maximum, while the two variables are fixed to each other by the relation

$$\Delta = g' + w' - p \frac{\sqrt{g'}}{\sqrt{g}} (g + w),$$

Δ being a constant with respect to g and g' and becoming zero at balance.

Solving this question (relative maxima), we get

$$\frac{(w - g)(w' + g') + f(w + w' + g' - g)}{p(g - w)g'} = \frac{2(g + w + f')}{2\sqrt{g}\sqrt{g'} - p(g + w)} \dots \text{II}.*$$

* To some of the readers, a more detailed working out of the mathematical problem may, perhaps, be welcome; and as this will also prove to be an easy control over the equations (II) and (II'), I will give it here in a somewhat condensed form. We had

$$a^0 \propto K \frac{\sqrt{g}}{N} \Delta \dots\dots\dots \text{I}$$

where K represents a constant, i. e. a quantity independent of any of the resistances in the differential circuit (Fig. 3), while $\Delta = g' + w' - p \frac{\sqrt{g'}}{\sqrt{g}} (g + w)$, i. e. a resistance which at balance becomes $= 0$; and further

$$N = (g + w)(g' + w') + f(g + w + g' + w').$$

Differentiating a with respect to w' , and remembering that $\frac{d\Delta}{dw'} = 1$, and substituting

ing $\frac{dN}{dw'} = R$, we have

which equation with the other

$$g' + w' - p \frac{\sqrt{g'}}{\sqrt{g}} (g + w) = \Delta = 0 \dots\dots\dots 1$$

gives all that is required to determine g and g' , and the values thus obtained

$$\begin{aligned} \frac{d a}{d w'} &= K \left\{ \frac{\sqrt{g}}{N} - \Delta \frac{R \sqrt{g}}{N^2} \right\} \\ \therefore \delta a &= K \underbrace{\left\{ \frac{\sqrt{g}}{N} - \Delta \frac{R \sqrt{g}}{N^2} \right\}}_{\phi} \delta w' \\ \therefore \delta a &= K \phi \delta w' \end{aligned}$$

Thus the variation of a is always directly proportional to ϕ , a known function of g and g' , and to make δa for any $\delta w'$ as large as possible, we have to make ϕ a maximum with respect to g and g' , while g and g' are connected by the following equation

$$\Delta = g' + w' - p \frac{\sqrt{g'}}{\sqrt{g}} (g + w) \dots\dots\dots I$$

p being a constant with respect to g and g' , as also is Δ .

We have, therefore, to deal here with a relative maximum, and in accordance with well known rules, we have to form the following partial differential coefficients:

$$\frac{d \phi}{d g} = \left\{ \frac{N - 2g \frac{d N}{d g}}{2 \sqrt{g} N^2} - \frac{R \sqrt{g} \frac{d \Delta}{d g}}{N^2} + \Delta S \right\}$$

$$R = \frac{d N}{d w'} = g + w + f$$

$$S = \frac{\sqrt{g}}{N^2} \left\{ \frac{2 R \frac{d N}{d g}}{N} - \frac{d R}{d g} - \frac{R}{2 g} \right\}$$

$$\frac{d \phi}{d g'} = - \left\{ \frac{\sqrt{g} \frac{d N}{d g'}}{N^2} + \frac{R \sqrt{g} \frac{d \Delta}{d g'}}{N^2} + \Delta S' \right\}$$

$$S' = \frac{\sqrt{g}}{N^2} \left(\frac{d R}{d g'} - \frac{2 R \frac{d N}{d g'}}{N} \right)$$

$$\frac{d \Delta}{d g} = \frac{w - g}{g} \frac{p}{2} \frac{\sqrt{g'}}{\sqrt{g}}$$

$$\frac{d \Delta}{d g'} = \frac{2 \sqrt{g} \sqrt{g'} - p (g + w)}{2 \sqrt{g} \sqrt{g'}}$$

At or near balance when Δ is = 0, or very small, the terms ΔS and $\Delta S'$ in the respective differential coefficients are to be neglected, because neither S nor S' become infinite for any finite values of g and g' .

Thus we have approximately:

$$\frac{d \phi}{d g} = \frac{N - 2g \frac{d N}{d g}}{2 \sqrt{g} N^2} - \frac{R \sqrt{g} \frac{d \Delta}{d g}}{N^2} = P - Q$$

would be those which would make the reading most delicate near balance, when the variation takes place in w' , i. e., the external resistance belonging to the coil g' .

If, instead of differentiating the expression for a with respect to w' by using the expression I, we had done so with respect to w by using the expression I', we should have obtained in a similar way the following relation between g and g'

$$\frac{(w' - g')(w + g) + f(w + w' + g - g')}{\frac{g}{p}(g' - w')} = \frac{2(g' + w' + f)}{2\sqrt{g}\sqrt{g'} - \frac{g' + w'}{p}} \dots \dots \Pi'$$

which equation connected with the other

$$\frac{d\phi}{dg'} = - \left\{ \frac{\sqrt{g} \frac{dN}{dg'}}{N^2} + \frac{R \sqrt{g} \frac{d\Delta}{dg'}}{N^2} \right\} = - (P' + Q')$$

further we will substitute :

$$\frac{d\Delta}{dg} = \alpha$$

$$\frac{d\Delta}{dg'} = \beta$$

Thus we have the following differential equation :

$$(P - Q) dg - (P' + Q') dg' + \lambda \{ \alpha dg + \beta dg' \} = 0$$

λ being the undetermined factor. From this equation we have :

$$P - Q + \lambda \alpha = 0$$

$$\text{and } -(P' + Q') + \lambda \beta = 0$$

or λ eliminated :

$$-\frac{P - Q}{\alpha} = \frac{P' + Q'}{\beta}$$

but we have always :

$$\frac{Q}{\alpha} = \frac{Q'}{\beta}$$

thus we have as end-equation :

$$-\frac{P}{\alpha} = \frac{P'}{\beta}$$

or the value for P , P' , α and β substituted we have :

$$N - \frac{2g \frac{dN}{dg}}{p g' (g - w)} = \frac{2 \frac{dN}{dg'}}{2 \sqrt{g} \sqrt{g'} - p (g + w)}$$

further substituting

$$\frac{dN}{dg} = g' + w' + f$$

$$\frac{dN}{dg'} = g + w + f$$

and reducing as much as possible, we have

$$\frac{(w - g)(w' + g') + f(w + w' + g' - g)}{p (g - w) g'} = \frac{2 (g + w + f)}{2 \sqrt{g} \sqrt{g'} - p (g + w)} \dots \dots \dots \text{II}$$

which is the equation II as given above.

In quite a similar manner, equation II' can be found, it must only be remembered that it is more simple to use expression I' for the purpose than I.

$$\frac{g' + w'}{p} \frac{\sqrt{g}}{\sqrt{g'}} - (g + w) = \Delta' = 0 \dots\dots\dots 1$$

gives all that is necessary to determine g and g' , being those values which would make the reading at or near balance most sensitive when a variation in w , the external resistance belonging to coil g , takes place.

Now it is clear that equations II and II' are not necessarily identical, as long as p does not fulfil certain conditions, and therefore the first set of equation II and I may give entirely different values for g and g' from those obtained from the second set II' and I), which means that a simultaneous maximum sensitiveness with respect to an alteration of the external resistances w, w' in either of the two differential branches, is *not* always possible. The following very important and interesting question, therefore, remains to be solved.

What general condition must be fulfilled in the construction of any differential galvanometer in order to make a simultaneous maximum sensitiveness possible, with respect to an alteration of external resistance in either of the differential branches?

[To be continued.]

NOTES ON A COLLECTION OF BIRDS FROM SIKKIM,

by W. T. BLANFORD, F. G. S.—C. M. Z. S.

(With Plates VII and VIII.)

[Received and read 6th September, 1871.]

Mr. L. Mandelli of Darjiling has sent to me for determination a most interesting collection of Sikkim birds, together with a few obtained from the plains near the base of the Himalayas. The birds sent are from various elevations, some being evidently from considerable altitudes. Strange as it may appear, after this chosen land of the feathered tribes had been explored and ransacked for years by such ornithologists as Hodgson, Jerdon, Tickell and many others, it yet yields novelties to so energetic a collector as Mr. Mandelli. Amongst the birds sent is a sixth Himalayan species of *Propasser*, indicated, it is true, some years since by Mr. Blyth, but not hitherto described, and the male of which was previously unknown. There is also a new *Pellorneum*, and apparently one or two undescribed warblers. Two other birds are additions to the fauna of India, and new localities are furnished for a few others.

To my notes on Mr. Mandelli's collection I have added some on birds collected by myself at low elevations in Sikkim. In another paper (antea p. 30), I have given a complete list of all the birds observed or collected by me in the

alpine and subalpine parts of the country, but as the fauna of the Sikkim pine forests differs entirely from that of the warm valleys, I have restricted the notes in my other paper to the former.

[The numbers prefixed to the birds refer to those in Jerdon's Birds of India.]

56a. *MILVUS MELANOTIS*, Temm. and Schl.

Fauna Japonica, Aves, Pl. iv and v.

Milvus major, Hume. Rough notes, Pt. I, p. 326.

After comparing a good series of specimens from the Godávari valley with Temminck and Schlegel's figures and description in the *Fauna Japonica*, I have come to the conclusion that Mr. Hume's first idea, J. A. S. B., 1870, p. 114, was correct, and that the large Indian kite is identical with the Japanese. Mr. Hume has evidently been misled by Radde and Schrenk, who identify *M. melanotis* with *M. migrans*, and he especially mentions (p. 325) that he has not access to the original description or measurements. Of course a bird only as large as *M. migrans* would be much smaller than *M. major*.

In the *Fauna Japonica*, however, it is expressly stated that *M. melanotis* is as large as *M. regalis*, but distinguished by the tail being less deeply forked, not more than in *M. alotius* (i. e. *migrans*). The measurements given are; length 23 to 24 French inches, wing $17\frac{1}{2}$ to 18, tail $10\frac{1}{2}$ to 11, tarsus $2\frac{1}{2}$, mid toe $1\frac{1}{2}$. The sexes are said to differ in size. The above are the dimensions of males of *M. major*, (the corresponding English measures being, wing $19\frac{1}{2}$, tail $11\frac{1}{2}$, tarsus $2\frac{1}{2}$.) and the adult female is considerably larger. There is, therefore, an element of doubt in the identification, because one of the birds described by Temminck and Schlegel is said to be an adult female. But as it is admitted by everybody that there is no distinction in the plumage, and as the male of *Milvus melanotis* clearly equals the male of *M. major* in size, it appears to me more probable that there has been a mistake as to the sex marked on one of the dried skins examined by the European naturalists, than that two representatives of *M. regalis* should be found in Eastern Asia.

This magnificent kite appears to be more widely spread in India than was supposed at first, and it is remarkable it should have been so long overlooked. I obtained two specimens in Sikkim, one shot by Captain Elwes's shikari at Tamlung, the other a young bird in the plumage described at p. 327 of Mr. Hume's "Rough Notes" as that of a young female. The wing measures 19.5 in., so the bird was probably a male.

I have also in February and April of the present year 1871 shot *Milvus melanotis* on the Godávari near Bhadrachalam, about one hundred miles north of Yelaur (Ellore). I obtained three specimens, one of them as late

as April, and I suspect the bird to be a permanent resident in the plains, and probably spread over the northern and eastern part of India. Like other Chinese birds, it may be wanting in Western India.

My observations on the habits of *M. melanotis* differ from those of Mr. Hume so far, that although at times it is certainly wary and difficult of approach, in other cases I have met with it close to human habitations. I shot one flying over my tent, and another a few paces away, near a village in each case, and a third, a fine adult female, I shot sitting on a tree in the middle of a village. I expect *Milvus govinda*, if it found itself limited, would prove equally wary.

71. HUHUA NIPALENSIS, Hodg.

I obtained a single specimen of this fine owl in the Tista valley, Sikkim, a little below Chingtam at an elevation of about 4000 feet. It was sitting on a high tree, in lofty, rather open forest, and calling at about 3 o'clock in the afternoon.* The cry is a single deep hoot. Unfortunately the body was thrown away without my determining the sex. I took measurements before skinning, and the following is a brief description of the plumage which differs somewhat from that noted by Dr. Jerdon.

Above dark hair brown, all the feathers, except those of the head, having the margins mottled with pale fulvous, the amount increasing on the lower back, until some of the feathers are mottled throughout. Upper tail coverts with several rather broad fulvous bars. Scapularies with broad irregular mottled bands and tips, and some of the largest with nearly the whole outer web pale isabelline fulvous, forming a distinct bar. Ear tufts $3\frac{1}{4}$ inches long, blackish brown on the greater portion of the outer webs, mottled with white on the inner and base of the outer, the white prevailing towards the base on the longest feathers. Lores with long bristly plumes, which are dirty white near the base, and tipped brown; ear coverts greyish white, the upper ones tipped brown; quills earthy brown, the primaries faintly banded, secondaries with broad mottled bars on the outer webs becoming white on the inner. Outer tail feathers similar to the secondaries, central with about six mottled bars; all the rectrices tipped pale brown, whitish at the extreme end. Chin with greyish bristly feathers like the lores, all the rest of the under parts, under wing coverts, tibial and tarsal feathers white with huge brown spots. Toes feathered nearly to the base of the claws. Iris brown, bill and toes yellow, claws dusky at points, pale at base. Length (of fresh specimen) $21\frac{1}{2}$, expanse 58, wing 17.5, tail 9.25, tarsus $3\frac{1}{4}$, bill from gape 2.1, from end

* Mr. Hodgson, in his original description of this bird, As. Res. XIX, p. 172, mentions its diurnal habits.

† This I find in my note book, but I make the dried tarsus about $2\frac{1}{2}$ to $2\frac{3}{4}$, it is very difficult to measure on account of the thick feathers. Jerdon gives 2 in., which is certainly too little, but his measurements are those of *H. pectoralis*.

of cere 1·43, mid claw straight to point 1·2, inner claw 1·6. hind claw 1·3 inch.

This bird differs from Jerdon's original description of *H. pectoralis*, Madras Journal, Lit. and Sc., Vol. x, p. 89 in the following characters :

The aigrettes are not barred, the feathers of the throat are not barred but spotted ; there is no distinct pectoral band, a slight fulvous tinge on the sides of the breast is all that appears. The bill is yellow, not greenish horny, the toes bright yellow, not reddish yellow. The tarsus appears to be decidedly longer. I should say, judging from the description and Jerdon's figure, that the two forms are distinct species, (conf. Blyth, Ibis, 1866, p. 254).

The Bútia name of this owl is *Migdori*.

80. *GLAUCIDIUM BRODIEI*, (Burton).

The differences in plumage in this bird are remarkable. I have three specimens lying before me, one being from Mr. Mandelli's collection. In the first, probably a young bird the whole plumage has a rufous tint. The head feathers with broad bars of reddish buff, the tail with 8 bars, each $\frac{1}{8}$ in. broad, extending right across the feather. In the second, the whole prevailing colour is very dark brown, the head with small buff spots, the tail (newly moulted and not fully grown) with narrow bars not extending across the central part of the feather. The third specimen is more rufous than the second, but less than the first, the tail feathers are crossed by 7 bars, interrupted near the shafts, whilst the head is greyish brown, unspotted behind and with only a few faint spots on the forehead. This evidently leads to the form described by Mr. Hume in the Ibis, 1871, p. 26, and referred to under the name of *G. immaculatus* in his Rough Notes, Part I, p. 420.

156. *PICUS CATHPHARIUS*, Hodg.

In two males, sent by Mr. Mandelli, the bars on the outer rectrices are fulvous, not white. The wings measure 3·75 and 3·9 in.

157. *P. MACEI*, Vieil.

Specimens from Sikkim differ from those shot near Calcutta in having a somewhat dingy grey tinge with faint subobsolete streaks below, instead of buff. I doubt if the distinction be worthy of specific rank, but so far as I can judge it seems to be constant.* I have two specimens, including one sent

* Since writing the above I have received from Mr. Mandelli a very peculiar specimen of a woodpecker, which I can only suppose to be an old bird of *P. Macei* in a state of semi-albinism. The back is brown, instead of black, and the middle rectrices have one distinct white spot on each web, and a second a little fainter about a quarter inch further back. Otherwise it agrees with *P. Macei*. The dimensions exceed those given by Jerdon, the wing being $4\frac{1}{4}$ inch long, but I find Bengal specimens equally large.

by Mr. Mandelli, and I find a third in the Indian Museum collection, which contains an abundance of Calcutta specimens. If the Himalayan race be separable, it might bear Hodgson's name *pyrriceps*. The figures in the *Planches Coloriées* and in Malherbe's Monograph are of the Bengal race.

163. *YUNGIPICUS PYGMÆUS* (Vigors). Sikkim.

94. *CHELIDON NIPALENSIS*, (Hodg.)

I found this bird tolerably common in the Tistá valley between Chungtam and Tanlung, often hunting in company with *Collocalia nidifica*. None were seen above about 5000 feet elevation.

263. *TEPHIRODORNIS PELVICA*, (Hodgs.)

An adult (male?) is sent by Mr. Mandelli, and I have two skins purchased at Darjiling, one perhaps that of a female, agreeing with Swinhoe's description of that sex from a Hainan specimen, *Ibis*, 1870, p. 242, except that the eye streak is well marked, and the lower points brownish. It is probably a young bird, for there are some pale markings on the edges of the secondary quills. The bill, however, is black throughout. The dimensions (in inches) rather exceed those given by Jerdon and Swinhoe.

	wing.	tail.	tarsus.	bill from forehead.	bill from gape.
1. Adult (♂ male),...	4.65	3.7	0.82	0.85	1.15
2. ♀ Female,	4.6	3.35	0.83	0.8	1.1
3. Young,	4.7	3.6	0.83	0.77	1.1

The third has the plumage above rather light brown, with traces of white bars on the back, the feathers of the head with pale centres, eye streak brown, secondary quills and tail feathers with rufous borders, and an interrupted dark streak, inside the pale border, the tips being mottled; lower parts brownish, but paler than in No. 2; bill pale coloured throughout.

270. *GRAUCALUS MACEI*, Less.

A young bird from Sikkim is moulting, and exchanging its nestling plumage for that of the adult. Some of the nestling feathers remain, those on the back are earthy brown with pale edges, those on the lower parts brownish grey, also with pale edges, but there are not many left, so that it is difficult to say to what extent the under surface is barred in this stage. It is evident, however, that the bars, if they exist, are much broader than in the form commonly described as the young,* and much browner in colour. The new feathers on the other hand are pure ashy grey on the throat and upper breast, barred on the lower breast, abdomen and thigh coverts, the vent being white. Wing 7.2, tail 5.6, tarsus 1.12 inch.

This is a very interesting specimen, because it proves that it is not the young bird, nor the bird of the second year, which is barred underneath

* Hartlaub Jour. F. Ornith, 1864, p. 440.

throughout. I know that in the race inhabiting the Central Provinces the female is barred beneath at all ages. I have four specimens from Chândâ and the Godavari valley, all females, and there are three more in the Indian Museum from Singbhûm, Chutia Nâgpûr, &c. Several are evidently adults, all are barred beneath on the throat and breast. Indeed, I am far from sure that the male of the Central Indian form is not also barred, one specimen in the Indian Museum marked as a male from Chutia Nâgpûr certainly is so, but a male from Manbhûm resembles the Himalayan bird, except that it is a little smaller, wing 6·75. This, however, may belong to the Eastern Bengal race, which is found in the Himalayas and East of the Bay of Bengal. The Indian form proper is, as a rule, rather smaller with a slightly smaller bill.*

G. Layardi, Blyth (? *G. pusillus* olim) Ibis, 1866, p. 368, is apparently quite distinct, for it is said to have the anterior under wing coverts barred, which is never the case in adults of the Central Indian form, and, according to Mr. Blyth, the breast in the female of *G. Layardi* is not barred. A description of the adult female of *G. Mucci* from Chanda may be useful to enable ornithologists with better collections to determine how far the Indian form is separable from the Himalayan, Eastern Bengal and Barmese race.

Upper parts bluish grey, the feathers of the rump and upper tail coverts with whitish edges. Central tail feathers a rather browner grey, outer tail feathers brown, passing into white at the tips, the white tips, being very narrow and soon worn off on the central feathers, so that they can only be detected in freshly moulted plumage, but increasing progressively in length until in the outermost rectrices they are $\frac{3}{4}$ in. to an inch long. Quills brown, all but the 1st narrowly edged inside and outside with white, the last secondaries (tertiaries) with the outer web grey. Lores dusky grey, a dark band from them passing through the eye and comprising the ear coverts. Lower plumage greyish white barred with darker grey on the throat and breast; abdomen and under tail coverts white, with a few dusky bars, further apart than on the breast, on the upper part of the belly and on the flanks.

Measurements (in inches) taken before skinning

Length	wing	tail	tarsus	bill from forehead	bill from gape
12	6·5 to 6·75	5·25	1·	0·9	1·4

Young birds have the grey of the head less pure, and the lower parts white, barred with dusky, the bars in some cases extending to the vent.

If the races from Central India and the Himalayas be distinguishable, it remains to be seen which is *G. Mucci* of Lesson. The Himalayan and Barmese races are identical, I believe.

631a. ZOSTEROPS SIMPLEX, Swinhoe.

Two specimens from Eastern Nipal, sent to me by Mr. Mandelli, belong to this race, which must be added to the Birds of India. The difference

* This has been, I find, noticed by Beavan, Ibis, 1867, p. 322.

from *Z. palpebrosus* is very slight, being precisely, as mentioned by Mr. Swinhoe, Ibis, 1870, p. 348, the smaller size of *Z. simplex*, and the greener tinge of the upper parts. I find other specimens from the Western Himalayas in the Indian Museum also referable to the Chinese race, whilst, as so frequently happens, specimens from the base of the Himalayas are intermediate in colour. But as there is no distinction either in hue or size between birds from China and others from the Himalayas, and as those from the plains of India appear equally constant, I think these two races are fairly distinguishable, and that the intermediate forms are hybrids. I append the dimensions (in inches) of the Himalayan birds and of two specimens of *Z. palpebrosus*.

	wing	tail	tarsus	bill from forehead.
<i>Z. simplex</i> , Sikkim,	1·95	1·33	0·6	0·37
Do. Do.	1·95	1·45	0·62	0·35
<i>Z. palpebrosus</i> , Godâvari ♂	2·1	1·5	0·6	0·35
Do. Do.	2·15	1·65	0·62	0·35

The Nilgiri race is a little larger than *Z. palpebrosus*, and of the same colour as *Z. simplex*, but the difference is not great, and I have but one specimen for comparison, (Confr. J. A. S. B. 1869, Pt. II, p. 170).

308. *CYORNIS MAGNIROSTRIS*, Blyth.

A female of this rare bird is amongst Mr. Mandelli's specimens, and I find a male in the Indian Museum collection, also from Darjiling. The latter agrees well with Major Godwin-Austen's description, J. A. S. B. 1870, p. 100. The central tail feathers are the same colour as the black. Mr. Blyth Ibis, 1866, p. 371, compares the coloration with that of *Cyornis rubeculoides*, but *C. magnirostris* has not the blue throat of that species, on the other hand the coloration approaches so closely to that of *C. Jerdoni*, that the two species can only be distinguished by the rather darker blue of the back, and the larger size and powerful bill of *C. magnirostris*.

The female has, I think, been described by Jerdon from the rather faded type specimen in the Asiatic Society's collection, the following is an account of the coloration in a fresh specimen. Upper parts olive, forehead and lores rufescent, feathers around eye pale ferruginous, tail browner than back, with a ferruginous tinge on the margins of the feathers; quills dark brown, all but the first two broadly margined with dull rufous. Major Godwin-Austen has overlooked Mr. Blyth's description of the male of this species from Hodgson's drawings, Ibis, 1866, p. 371.

Under parts ferruginous, deepest on the breast, flanks olive, lower abdomen and under tail coverts white.

The dimensions are, in inches.

	wing	tail	tarsus	bill from forehead	bill from gape.
Male.....	3·25	2·45	0·7	0·55	0·77
Female,	3·17	2·2	0·7	0·55	0·75

325. ? *ERYTHROSTERNA ACORNAUS*, Hodgs.

(Conf. J. A. S. B. 1869, Pt. II, p. 174).

A specimen from Darjiling which I am disposed to refer to this species has the upper parts olivaceous, whilst on the forehead there is a single blue feather. Can the male bird be blue? I have nothing else to add to the suggestion of Mr. Hume that this form may be the female of *E. maculata* (J. A. S. B. 1870, Pt. II, p. 116).

320. *SIPHIA LEUCOMELANURA*, (Hodgs.)

Of two specimens sent by Mr. Mandelli, one has the whole chin, throat and upper breast white, and the lower breast and abdomen sordid brown, the other has only the chin and throat white, and the rest of the lower parts, except the lower tail coverts, isabelline. In both the quills are brown, the primaries and all the secondaries, except the last 4 or 5, with rufescent margins. The female has been described by Dr. Stoliczka, J. A. S. B. 1868, Pt. II, p. 32.

321. *S. SUPERCILIARIS*, (Blyth).

Of this also two specimens are sent by Mr. Mandelli. The quills are brown with rufous margins, the central rectrices the same colour as the back, lateral rectrices darker, those nearest the centre with narrow faint subobsolete transverse bands, all margined with cyanous; extreme base of all rectrices, except the centre pair, white. In one specimen the ferruginous colour of the breast is mixed with olivaceous. Wing 2·3, tail 1·75, tarsus 0·7, bill 0·32 inch.

313. *NITIDULA HODGSONI*, (Moore).

The only specimen differs somewhat, both in colour and dimensions from Dr. Jerdon's description. The quills are dark brown, not black, the secondaries externally with blue edges, the lores and ear coverts appear to be blue, and the colour below is rich ferruginous, as deep as in *Larvivora superciliaris*. Wing 1·9, tail 1·25, tarsus 0·63, bill from forehead 0·35, from gape 0·48 inch.

This bird appears to me rather to consort with the *Ruticillinae* than with the *Muscicapinae*. Its bill is slightly more depressed than that of *Ianthia* or *Larvivora*, and its legs a little shorter, but the difference is very small. The fact is, that the distinction between the two families is rather difficult to determine in these Himalayan forms. The bird was described by Moore as a *Nemura* (= *Ianthia*). Mr. G. R. Gray, in his very useful Hand-list of genera and species of birds, evidently by oversight, quotes it twice; as *Nemura Hodgsoni* (3188) at p. 222, and as *Nitidula Hodgsoni* (1903) at p. 327.

329. *PHOEPYGA SQUAMATA*, (Gould). *Tesia rufiventer*, Hodgs.

Of two specimens received one has the upper parts nearly uniform olivaceous brown, the other has a small bright ferruginous spot at the apex of nearly every feather. Both have the lower parts ferruginous, the feathers with olive centres and narrow dusky margins. From the differences in the upper plumage, it is evident that the colour of the lower parts does not change with age, (vide antea, p. 55).

338. *BRACHYPTERYX CRURALIS*, Blyth.

A pair, male and female, are sent by Mr. Mandelli, and I have a young bird, shot by myself, which I am inclined to refer to this species, although the tarsi are longer than in the adult specimens, whilst the bill is much shorter. It may belong to an undescribed form, so I give a description.

Plumage generally olive brown, all the feathers of the upper parts, throat and breast with rufous centres, upper tail coverts rufous, belly pale brown. Wing 2.55, tail 1.7, tarsus 1.3, bill from forehead 0.43 inch.

336. *BRACHYPTERYX NIPALENSIS*, Hodgs.

A single specimen from Darjiling has the wings rufous brown, the margins being more rufous than the rest of the feathers. The grey of the breast is mixed with white, and there is a greyish tinge on the feathers of the throat and abdomen in places. This may be a young male. Wing 2.4, tail 1.5, tarsus 1.08, bill from forehead, 0.47.

I fully agree with Mr. Hume (Ibis, 1870, p. 529) in considering *Hodgsonius* as closely allied to *Loricora*, but I cannot see the possibility of dissociating it, and *Callene* from *Brachypteryx*, as is done by Mr. G. R. Gray, in his recent "Hand-list of Birds," in which he places the last named in the *Leiothrichinae** (a position unsuited for it in my opinion,) and all the other genera named, with *Ruticilla*, in the *Luscininae*. *Brachypteryx nipalensis* is very much like a *Calliope*, and although there is also a similarity to *Phoebe*, it is I think not so marked, partly perhaps because there is no resemblance in the general coloration.

It is a pity we have no details of the nidification of *Brachypteryx*, as it would aid in showing its affinities. The nest of *Callene frontalis* is said to be wren-like, Ibis, 1866, p. 373, but the allied *C. albiventris*, (P. Z. S. 1867, p. 834), nidificates in a hole of a tree, and lays but two eggs. Unless the length of a bird's tail be taken as the most important point in its structure, I do not see how *Callene* and *Brachypteryx* can be classed apart, and I am

* Prof. Newton, in the Zoological Record places *Brachypteryx* amongst the *Timaliidae*. Some Malayan forms, formerly assigned to *Brachypteryx* belong to this family, (Ibis, 1865, pp. 33, 47), but the Himalayan species differ greatly in structure and habits from the Timaline birds.

disposed to separate both from the wrens, and also from *Myiophonus*, and class them with *Hodgsonius*, *Ianthia*, *Larvitora*, *Tarsiger*, and *Calliope*, either in the *Ruticillinae*, or as a distinct subfamily. I am not sure but that *Nitidula* might be added.

529. *HOREITES MAJOR*, Hodgs.

I obtained a specimen on Sinchal near Darjiling.

498. *RUTICILLA HODGSONII*, Moore. Sikkim.

570. *IANTHIA SUPERCILIARIS*, (Hodgs.)

The female appears rather smaller than the dimensions given by Dr. Jerdon. I find in one from Darjiling, wing 3.05, tail 2.5, tarsus, 1.17, bill from forehead 0.45 inch. The distinctions between this form and *Ianthia rufilata* scarcely appear to warrant generic separation.

507. *LARVITORA SUPERCILIARIS*, (Jerdon).

The chin in the male is white, with a black streak on each side, thigh coverts mixed with grey. Wing 2.82, tail 1.75, tarsus 1, bill from forehead 0.45, from gape 0.63 inch.

Placing this species beside a series of flycatchers, including *Cyornis Jerdoni*, *C. maynrostris*, *Siphia superciliaris* and *Nitidula Hodgsoni*, it is curious to remark the extraordinary similarity in the colouring and its distribution, whilst, except the bill, there is really very little structural difference between these various birds. The tarsi vary in length certainly, but all have rather long than short tarsi.

477. *MYIOMELA LEUCURA*, Hodgs.

I shot a male of this species at Darjiling: it was running along a road in the evening at dusk. Mr. Mandelli has sent a female. The white on the tail, judging from these specimens, occurs on all the feathers except the central and outer pairs, and it increases inwardly, not outwardly, as stated by Jerdon.

594. *BUDYTES CITREOLUS*, (Pall).

A Sikkim specimen has the wing $3\frac{1}{2}$ in., and is consequently the larger race, if there be two, or *B. citreolus*, Pall., *verus*.

766. *ALAUDA ARVENSIS*.

Amongst the specimens procured by me at Darjiling is a skin of a lark, which, to the best of my recollection, was purchased with some other skins of birds, evidently shot in the neighbourhood, from a shikari. It only differs from English specimens of the skylark by its greyer tint on the back and hind neck. Wing 4.2, tail 2.55, bill 0.45, tarsus 0.98, hind toe and claw 1.08, claw alone 0.65 inch.

The occurrence of *A. arvensis* so far to the eastward strongly confirms Mr. Blyth's view of the identity of *A. triborhyncha*, Hodgs. (Ibis, 1867, p. 47) with it.

560a. *PHYLLOSCOPUS PALLIDIPES*, sp. nov. Pl. vii.

P. supra umbrino-olivaceus, uropygio magis rufescenti; loris et lineâ postoculari umbrinis, superciliis albis, postice elongatis; remigibus umbrinis, extus rufescente olivaceo marginatis, rectricibus mediis cum dorso fere concoloribus, ceteris umbrinis, olivaceo-marginatis; gastro sericeo-albo, pectoris lateribus olivaceis, axillâ albâ; rostro supra fusco, infra pallido; pedibus albescentibus. Long. alæ 2·05, caudæ 1·7, tarsi 0·76, rostri a fronte 0·4, a rictu 0·55 unc.

Brownish olivaceous above, supercilium white, extending far back, a dark line from the lores through the eye to the upper part of the ear coverts, the lower portion of which are light brown, central rectrices very little darker than the back, outer rectrices and wing feathers earthy brown, margined with olive which is rufescent on the edges of the quills. There is also a rufescent tinge on the rump. Lower parts silky white, sides of the breast dusky olivaceous, and the middle of the breast not quite so fine a white as the throat and abdomen, but this may be an individual peculiarity. Lower wing coverts, axillaries, and forepart of wing white. Bill dark above, pale below; feet very light coloured. The fifth quill is the longest, it exceeds the first by 0·87 in., the second by 0·4, the third by 0·15.

This form of which a single example in beautiful order has been sent by Mr. Mandelli appears to me quite new. It is near *P. neglectus*, Hume, Ibis, 1870, p. 143, but differs in its olivaceous tint above, smaller size and in the very pale coloured tarsi and feet. It is also quite distinct from *P. tristis*, Bl., *P. fuscatus*, Bl., *P. lugubris*, Bl., and from the various species described from China by Mr. Swinhoe, *P. tenellipes*, Swinh., alone resembling it in its pale feet, but differing in colour.

REGULOIDES SP. ?

A single specimen from Mr. Mandelli's collection closely resembles *R. proregulus*, Pall. (*R. chloronotus*, Hodgs.) in appearance and size, and has a similar minute bill though a little broader and more *Alburnis*-like, but the head is dusky grey, almost black, with a white central line and white supercilia, a distinct dusky line from the lores through the eyes; cheeks, throat and breast greyish white, lower breast and abdomen pale yellow, the two outer tail feathers on each side have the whole inner web white, and the third has nearly the whole, a very narrow border inside the web near the tip being brown, but the tip of the inner web itself white, not dark as in *R.*

erachroa. The wings and central rectrices are earthy brown with green outer margins, margin of wing yellow, inner wing coverts and inner margins of quills white, a little pale yellow on the axillaries, back olive, rump yellowish white. Bill dark throughout, without the pale base beneath of *R. proregulus*. Wing 1·82, tail 1·2, tarsus 0·7, bill from forehead 0·3, do. from gape 0·38 inch.

This appears to me to be an undescribed species. It is possible that it may be *Abrornis maculipennis*, Blyth, but in that case the measurement of the wing, Ibis 1867, p. 27, given as 2·75 in. must be a misprint for 1·75. This is possible, for the length of the tarsus is misprinted evidently. The bill in the specimen before me is somewhat between that of *Reguloides* and *Abrornis*, but the plumage is that of the former genus.

REGULOIDES SP. ?

This is again a single specimen, and may possibly be a variety of the last. It differs in being larger, but having a still shorter bill, and in the tips of the larger wing coverts being golden yellow, almost orange. There is a yellow tip in the outer web of the last few secondary (tertiary) quills which are in bad condition in the specimen last described, thus adding to the similarity to *Abrornis maculipennis*. The legs appear to differ in colour from those in the specimen last described. Wing 2, tail 1·35, tarsus 0·7, bill from forehead 0·27, from gape 0·35 inch.

570. CULICIPETA CANTATOR, (Tickell).

Mr. Blyth calls this an *Abrornis* (Cat. Birds As. Soc. Mus. p. 183, and Ibis, 1867, p. 26). Two specimens which I can only refer to this bird are amongst Mr. Mandelli's despatch. The bill appears to me intermediate in form between *Abrornis* and *Culicipeta*, whilst the plumage is that of the latter genus, or rather of *Reguloides*. In fact but for the bill, the skins might be considered small specimens of *R. trochiloides*.

As there is no specimen of *C. cantator* in the Indian Museum, it is just possible I may be in error in the present identification. The birds do not agree very closely with Jerdon's description. The following are their characters.

Head greenish dusky above with an irregular whitish central streak, supercilia pale yellow, sides of head mixed dull green and whitish. Back dull green, a little lighter on the rump. Wings and tail brown, edged with green externally, the three outer rectrices on each side having the inner web margined and tipped with white, most broadly on the outer feathers. Tips of wing coverts pale yellow, forming two bars; edge of wing and axillaries pure yellow; under parts greenish or yellowish white. Bill dusky above, pale below; feet rather dark.

	Wing	Tail	Tarsus	Bill from forehead	Bill from gape.
(1)	2.28	1.73	0.73	0.38	0.55 inch.
(2)	2.1	1.6	0.7	0.38	0.54 „

574. *ABRORNIS SUPERCILIARIS*, Tickell.

J. A. S. B., 1859 p. 414,—*A. flaviventris*, Jerdon, Birds of India, vol. ii, p. 203.

As pointed out by Mr. Blyth, Ibis, 1867, p. 26, Darjiling specimens appear to agree with those from Tenasserim.

577. *A. ALBOGULARIS*, Hodgs.

Top of head rufous olive, with a black band on each side above the rusty supercilia, wings yellowish white within.

579. *TICKELLIA HODGSONI*, (Moore).

Mr. Mandelli has obtained three specimens of this rare bird, two of which appear to have no yellow in the middle of the rump, only the sides being of that colour. The fifth and sixth quills in both specimens slightly exceed the fourth in length.

	Wing	Tail	Tarsus	Bill from forehead	Bill from gape.
1	1.95	1.7	0.72	0.1	0.58 inch.
2	1.82	1.61	0.8	0.35	0.53 „
3	1.93	1.75	0.8	0.34	0.5 „

519a. *DUMETICOLA BRUNNEPECTUS*, Blyth, Ibis, 1867, p. 20.

The following is the description of a specimen sent by Mr. Mandelli.

Upper parts uniform olive brown, quills and outer rectrices brown with margins of the same colour as the back; lores whitish, chin, throat and middle of belly dirty white, sides of neck and breast the same colour as the back, middle of the breast pale brown, thigh coverts, vent and under tail coverts olive brown, the last named with white tips of no great breadth, about 0.1 in.; bill black, feet brown. Wing 2.3 in., tail 2, the central feathers exceeding the outer by 0.3, tarsus 0.82, bill from forehead 0.38, from gape 0.55. The fifth quill is the longest, the fourth very little shorter, third less by 0.1, second by 0.37 and first by 1 inch.

522. *TRIBURA LUTEOVENTRIS*, Hodgs.

I refer to this species a specimen sent by Mr. Mandelli, but which has not a trace of yellow on the lower parts.* The only example of Hodgson's species in the Indian Museum is in very bad order, and the colours have

* In Hodgson's original description P. Z. S. 1845, p. 30, the bird is said to be above olive brown with a luteous lustre, below lutescent laterally, and albescent centrally, a pale line over the eye. This agrees much better with the specimen before me than does Jerdon's account in the 'Birds of India.'

faded so much that it is difficult to form an idea of what they originally were. I append a description of Mr. Mandelli's bird.

Above uniform rufescent brown with an olivaceous tinge, wings and tail rather darker brown, the former with the margins of the feathers rather more rufous, sides of head and indistinct supercilia paler. Beneath, the chin and throat are dirty white, the remainder of the lower parts a similar colour to the back but paler, abascent towards the vent. Wing 2·1, tail 2·1, much graduated, the outer feathers 1·2 shorter, tarsus 0·73, bill from forehead 0·39, from gape 0·62 inch.

The figure of *Calamodyta affinis* in Gray's Genera of Birds, Pl. xlix, stated by Mr. Blyth, Isis, 1867, p. 19, to represent this species, is altogether paler and more rufous than the specimen sent to me. It might have been taken from a faded specimen, but I cannot help thinking it possible that two forms are confounded under this species. Can one of them be *Horornis fortipes*?

535. *PRINIA STEWARTI*, Blyth.

A specimen sent by Mr. Mandelli is probably from Parniya or Tichit. It is certainly smaller than specimens of *P. socialis* which I possess from the neighbourhood of Yelaur (Ellore), and the grey of the back is darker and purer, but the bill, though rather shorter, appears decidedly broader at the base. Wing 1·82, tail 2·1, tarsus 0·85, bill from forehead 0·42, from gape 0·55 inch.

537. *P. CINEREO-CAPILLA*, Hodgs.

Head, nape and hind neck, lores and upper ear-coverts rather earthy brown, remainder of upper parts very rufous brown, ochraceous on the rump, most rufous on the wings and tail; quills hair brown, margined with rufous; tail feathers more rufous, with pale tips, and a distinct dark spot just before it. Supercilium and lower parts white, with a faint creamy tinge, sides of breast olivaceous, flanks rufous, thigh coverts ferruginous; wing 1·75, tail 1·78, tarsus, 0·8, bill from forehead 0·4, from gape 0·55 inch.

This differs a little from Jerdon's description; his length of the bill $\frac{3}{4}$ in. must be a misprint for $\frac{5}{8}$. From *P. gracilis* the much more rufous lower back, wing and tail, and the darker head, serve easily to distinguish the present species, but the under parts with the exception of the thigh coverts are not more rufous. The bill appears to be a little stouter.

391. *STACHYRIS NIGRICEPS*, Hodgs.

A specimen wants the white supercilium and has the fore-neck bright rufous, much more rufous than the abdomen. Wing 2·2, tail 1·85, tarsus 0·85, bill 0·65 inch.

399a. *PELLORNEUM MANDELLII*, sp. nov. Pl. VII.

P. peraffine *P. ruticepi*, Swains., sed *staturâ minori, collo postico et laterali maculis fuscis magnis signato, maculis pectoralibus majoribus et*

saturationibus. Long. alæ 2·65, caudæ 2·5, tarsi 0·95, rostri a fronte 0·6, a rectu 0·75 unc.

Crown of head and nape ferruginous, lores, over and under the eye, pale pinkish isabelline, most of the feathers of the forehead, lores and supercilia with slight dusky tips, ear coverts pale rufous brown, also with dark tips, back of the neck isabelline, or pale brown, each feather with a large dusky spot, frequently confined to one web, mantle and tail brownish olive, all the rectrices except the centre ones with narrow pale tips, quills hair brown margined with brownish olive externally, internally, like the lining of the wing, pale brown. Chin and upper throat pure white, remainder of lower parts isabelline, breast and sides of neck with large elongate dusky spots, flanks also spotted, but the spots are paler, abdomen unspotted. Bill dusky above, pale below, legs very pale coloured.

This species differs from *P. ruficeps*, Swains., and *P. Tickelli*, Blyth, (J. A. S. B., 1859, Vol. xxviii, p. 414; = *P. subochraceum*, Swinhoe, A. and M. N. H., April, 1871, p. 257), by having the neck spotted all round and by the spots in front being much deeper and darker. In size it resembles *P. Tickelli*, being smaller than *P. ruficeps*. It may perhaps be the new species from the Khasi hills mentioned by Dr. Jerdon in Birds of India, II, p. 28. A single specimen has been sent to me for identification by Mr. Mandelli, after whom I have named it.

620. MINLA CINEREA, (Blyth).

The type of this species is a very dull coloured grey specimen. I am almost inclined to doubt, if the much more brightly coloured birds described by Jerdon, and of which a specimen is sent by Mr. Mandelli, are really identical, but a series is necessary for deciding this. In the bird sent to me the wing measures 2·1, tail 1·5, tarsus 0·82 inch.; the dimensions are rather less than those of the type specimen, so that, if the differences are sexual, the female would appear to be the larger bird.

625. IXULUS STRIATUS, Blyth.

Neither Mr. Blyth in his original description of the Tenaserim specimen, nor Dr. Jerdon in the characters taken doubtless from his Darjiling or Khasi birds, mentions one of the most characteristic peculiarities of this form,—its ferruginous brown ear coverts and supercilia. In the type from Tenaserim, which is in the Indian Museum, I can detect these, although they are paler (perhaps from fading) than in a fresh specimen obtained by Mr. Mandelli, which otherwise agrees perfectly with Dr. Jerdon's description. Wing 2·35, tail 2·1, tarsus 0·6, bill from forehead 0·35 inch.

630. *HERPORNIS XANTHOLEUCA*, Hodgk.

Of two specimens sent, one has a decidedly rufescent tinge on the back. The colour is dull yellowish green above, under wing coverts and inner margins of both remiges and rectrices bright yellow. The coronal feathers have not black shafts and the margin of the wing is yellow, these being distinctions from the new Hainan and Formosan species, *H. tyrannulus*, recently described by Mr. Swinhoe (Ibis, 1870, p. 347, pl. x), besides the duller colour of the plumage.

632. *SYLVIPARUS MODESTUS*, Burton. Single specimen.647. *MACHLOLOPHUS XANTHOGENYS*, (Vigors).

A specimen was obtained in Eastern Nipal. Its representative form, *M. spilonorotus*, occurs around Darjiling.

694. *PLOCEUS BAYA*, Blyth. J. A. S. B., xii, p. 945.

P. megarhynchus, Hume, Ibis, 1869, p. 356, and 1871, p. 36.

Mr. Hume has pointed out that there are two species of *Ploceus* in India of the form originally confounded under *P. philippinus*, L. To one of these, which is larger than the other, and distinguished by a larger bill, he has given the name of *P. megarhynchus*. I find, however, that the large billed form is that inhabiting the Himalayas, Eastern Bengal, Asam, Malacca and probably Barma, and that it was upon specimens of it that Mr. Blyth's *P. baya* was founded, as it is the species found at Calcutta, and all the examples in the Asiatic Society's collection appear to belong to it.

There is of course a possibility that I may be mistaken in this, and that Mr. Hume's *P. megarhynchus* may be, in the breeding plumage, something well distinguished from *P. baya*, but I can detect no difference of the least importance in the description of the birds in non-breeding plumage. At the same time it is clear that there are two varieties of *P. baya*, but I am not quite sure that the difference is sufficiently constant to deserve specific distinction. I append measurements (in inches) of the two forms.

	wing	tail	tarsus	bill from front
<i>P. baya</i> , six specimens: four males, two females from Calcutta, Sikkim and Cachar.	2.85 to 3.05	1.87 to 2.15	0.82 to 0.9	0.69 to 0.77
<i>P. baya</i> , small var., three specimens: one male and two females from Singbúm and Chanda.	2.6 to 2.75	1.7 to 1.8	0.79 to 0.9	0.65 to 0.69

I can detect no constant difference between males and females. Bonaparte's remark in the Conspect. Gen. Av. p. 442 *fœmina minor*, must have

been due to his having seen females, or males, in non-breeding plumage of the smaller form.

The smaller form is of course the *P. baya* of Jerdon's Birds of India.

723. *EUSPIZA RUTILA*, (Pall.)

Fauna Japonica, Aves, p. 95, pl. lvi, B.

This is an addition to the Indian fauna. The specimen sent by Mr. Mandelli agrees perfectly with Mr. Blyth's description of that shot by myself near Bassoin in Pegu, (J. A. S. B., 1863, p. 77), and with the description and figure in the Fauna Japonica. I add characters taken from the Sikkim specimen which is doubtless a male.

Head and neck, upper breast, back, wing coverts, and broad edges to the last secondary quills (tertiaries of some authors) uniform reddish ferruginous, with slight hoary edges to some of the feathers (doubtless disappearing in spring), especially on the chin, lores, and round the eyes; wing and tail brown, the quills narrowly edged with yellowish white, second, third and fourth quills emarginate on the outer webs, margin of wing yellow, inner wing coverts and inner margins of quills white, lower parts from breast yellow, not very bright, flanks olive.

Wing 3 in., tail 2·4, tarsus 0·77, bill from forehead 0·43.

I learn from Mr. Mandelli that this bird was shot in British Sikkim on the great Ramrit river in March, and that he has a second specimen from Dalingkót in Bútán, shot in April.

745a. *PROPASSEE SATURATUS*, sp. nov. Pl. viii.

♀ *P. thura*, Blyth, Museum Asiatic Soc., nec Bonaparte, vide Ibis, 1865, p. 43 et 1867, p. 44.

♂ juv. ? *P. thura*, ♀, (nec ♂) Moore P. Z. S. 1855, p. 216, Pl. cxiv.

P. nas fronte, superciliis latis et genis pallide argentato-roseis, capite insuper nuchâ et lateribus colli cum regione auriculari saturate coccineis, vertice nigro striatulo; dorso brunneo, plumarum marginibus pallidis, coccineo-lacatis, uropygio rufo-lacatiore; remigibus cum tectricibus alarum rectricibusque umbrinis, rubro-marginatis, tectricibus et 3 ultimis pennis ad extremitates externas roseis, fuscâ alæ tectricibusque subalaribus partim roseo-marginatis; mento griseo, gula late coccinâ, nitore argenteo splendente, pectore saturatiori, plumis pallide marginatis, abdomine pallide roseo, unâ cum pectore subobsolete fusco striatulo, subcaudalibus brunneis, roseo-marginatis, tibiis et hypochondriis rufis-brunneis. Long. alæ 3·22, caudæ 2·6, tarsi 0·95, rostri a fronte 0·49, a recta 0·52, l. tota circa 6 unc. angl.

Femina umbrina, capitis et dorsi plumis pallide marginatis, superciliis latis isabellinis; alis caudaque umbrinis, pennis extus pallide marginatis,

maculis ad extremitates externas tectricum et 3 pennarum ultimarum albescentibus, uropygio ochraceo-tincto, gastro fulvo, fusco striato, abdomine pallidior et magis rufescente. Long ale 3.15, caudæ 2.5, tarsi 0.95, rostri a fronte 0.47, a rectu 0.5 unc.

Male with a general brownish tint above, richly glossed with crimson, lores, forehead, supercilia and cheeks pale silvery pink, the bases of the feathers brown, head above dark crimson with blackish centres to the feathers, ear coverts and sides of the neck duller crimson, the centres of the feathers broader and less distinct, back with broad dashes of dark earthy brown, the edges of the feathers pale with a gloss of deep rose colour, approaching crimson, rump and upper tail coverts nearly the same colour as the back, the dark centres of the feathers being less marked, and the paler margins with their crimson gloss broader. Wing and tail feathers earthy brown with red brown exterior margins, and pale rosy spots on the tips of the outer webs of the wing coverts and of the last three quills. Chin greyish, throat full rose colour, darker than the cheeks, with a silvery gloss. The breast is deeper and darker red, the feathers having pale rosy edges and narrow dark central stripes, abdomen pink, also with narrow streaks; under tail coverts brown, edged with pink; thighs and flanks brown, slightly tinged here and there with pink. Bill dusky, legs brown.

The female is earthy brown, the feathers of the upper parts with pale margins, and the wing coverts and last three quills (tertiaries) with albescent tips to the outer webs, supercilia isabelline, rump with an ochraceous tinge. Under parts fulvous, all the feathers with dark centres, broader on the breast, narrower on the abdomen, which has a rufescent tinge.

Another bird, apparently a young male is much more ochraceous than the female in colouring, especially on the under parts, sides of neck and head; the margins of the quills and tail feathers are olivaceous.*

This beautiful rose finch is evidently the species of which a female exists in the Asiatic Society's Museum, labelled *P. thura* by Mr. Blyth, and to which that gentleman refers in the "Ibis" in the two instances cited above. It is altogether of a richer and darker colour than any of the other Himalayan species with which I am acquainted, viz., *P. rhodopeplus*, *thura*, *rhodochlams* and *rhodochrous*, and easily distinguished from all at once by the absence of the rosy rump. *P. pulcherrimus* is said to be near *rhodochrous*, which differs perhaps more from the present species than any of the others, it too

* Another pair of this bird since received from Mr. Mandelli confirms the above description, except that the throat of the male is the same colour as the cheeks, instead of being rather deeper red; they measure (in inches)—

	wing	tail	tarsus	bill from forehead.
Male,.....	3.15	2.5	0.92	0.48
Female, ...	3.05	2.45	0.95	0.49

has a crimson rump. On the whole the present form approaches *rhodopeplus* more than any of the other species, but besides the differences already noted the forehead in *rhodopeplus* is not brighter in colour than the crown of the head.

The bird figured as the female of *P. thura* by Mr. Moore in the Proceedings of the Zool. Soc. of London for 1855, Aves, Pl. cxiv. does not belong to that species. It may perhaps be the young male of this bird but its general coloration appears too rufous. The colour differs greatly from that of the female of *P. saturatus*.

At this time it is surprising to find that so beautiful a bird as this has hitherto been overlooked in the Sikkim Himalayas. Mr. Mandelli informs me that the specimens were shot on Tonglú, about 10,000 feet high near Darjiling.

Amongst other interesting birds sent by Mr. Mandelli are *Xiphoramphus superciliaris*, *Sitta criniger*, *Neornis flavolivacea*, *Pteruthius erythropterus*, *Accentor strophilatus*, *Emberiza pusilla* and *Chrysomitris spinoides*.

JOURNAL OF THE ASIATIC SOCIETY.

Part II.—PHYSICAL SCIENCE.

No. III.—1872.

MONOGRAPH OF INDIAN CYPRINIDÆ, PART V,—by Surgeon Major F. DAY.

[Received 7th March, 1872; read 1st May, 1872.]

3. Sub-family.—COBITIDINÆ.

[Continued from p. 29.]

Pseudobranchiæ absent. Body elongated, oblong, compressed or cylindrical, but never depressed. Snout and lips fleshy. Mouth small, inferior, and furnished with from six to twelve barbels. Pharyngeal teeth few and in one row. Vertical fins spineless. Dorsal fin with a varying number of rays (8-30); anal with few (7-8); ventrals absent in one genus. Scales, small and cycloid, when present, and usually immersed in mucus. Lateral line single. Air vessel entirely, or partially, enclosed in a bony capsule.

Geographical distribution. Loaches are found in tanks and rivers throughout the hills and plains of India and Barma, but apparently are absent from the Andaman islands. All the recognised genera seem to be represented in the East. These fish are mostly captured by lading out tanks commencing to dry up, but as they dive about in the mud, they are usually difficult to capture.

Uses.—They are all good as food.

SYNOPSIS OF GENERA.

A. *With an erectile spine near the orbit.*

1. *Apna*, eight barbels, two rostral, four maxillary and two mandibular. Spine suborbital. Dorsal fin short (8 rays) in the posterior third of the body, but anterior to the anal. No ventrals. *Barma*.

2. *Acanthophthalmus*, six barbels, two rostral, four maxillary. Spine suborbital. Dorsal and anal fins as in *Apna*. Ventrals present. *N. E. India, Assam, Barma*.

3. *Lepidocephalus*, six barbels, four rostral, two maxillary. Spine suborbital. Dorsal fin short, in last two fifths of the body. *Malay Archipelago.*

4. *Acanthopsis*, eight barbels, two being mandibular. Spine before the orbit. Dorsal fin of moderate length (12 rays), placed opposite the ventrals. *Barma.*

5. *Colites*, six barbels, all rostral and maxillary. Spine suborbital. Dorsal fin short (9-10 rays), placed opposite the ventrals. *India and Barma.*

6. *Leptoccephalichthys*, eight barbels, two mandibular. Spine suborbital. Dorsal fin short (8-9 rays), placed opposite the ventrals. *India.*

7. *Botia*, six to eight barbels; if six, all are rostral and maxillary, should there be eight, the extra pair are mandibular. Spine suborbital. Dorsal fin of moderate length (10 to 15 rays), commencing anterior to the ventrals. *Northern and Eastern India and Barma.*

8. *Jerdoniæ*, eight barbels, two being mandibular. Spine suborbital. Dorsal fin long (30 rays), commencing anterior to the ventrals.

B. *Destitute of spine near the orbit.*

9. *Nemacheilus*, six to eight barbels, rostral and maxillary; if eight, the extra pair at the posterior nostril. Dorsal short or of moderate length (8 to 17 rays) commencing opposite the ventrals. *India and Barma.*

10. *Oreomystes*, six barbels, rostral and maxillary. Dorsal fin short (9 rays), far behind the ventrals. *China.*

11. *Misgurnus*, ten to twelve barbels, four being mandibular. Dorsal short (9 to 10 rays), commencing opposite the ventrals. *Barma.*

A. *With an erectile spine near the orbit.*

Genus. *APUA*, Blyth.

Body elongated and compressed. A small, erectile, bifid, suborbital spine. Eight barbels, one rostral pair, one maxillary pair, and two mandibular pairs. Dorsal fin in the posterior third of the body, but anterior to the anal. Ventral fins absent.

Geographical distribution.—The single species of this genus, which has yet been discovered, was obtained near Pegu in British Barma.

A SINGLE SPECIES.

1. *Apuia fusca*, D. 2/6. A. 2/6. *Barma.*

1. *APUA FUSCA.*

Blyth, Journal Asiatic Society of Bengal, 1860, p. 169; *Günther, Catal, vii, p. 371; Day, Proc. Zool. Soc. 1869, p. 349.

B. III. D. 2/6. P. 11. A. 2/6. C. 16.

Length of head $1/8$, of caudal $1/9$, height of body $1/8$ of the total length. *Eyes*, small, diameter $1/9$ of length of head, 4 diameters from end of snout. A small erectile bifid spine below the orbit. *Fins*.—Dorsal half as high as the body; caudal rounded. *Colours*, brownish, with a longitudinal darker band. There are three specimens in the Calcutta Museum, the largest being $2\frac{1}{2}$ inches long.

Hab.—Barma.

Genus. 2. *ACANTHOPHTHALMUS*, v. *Hass.**Pangio*, Blyth.

Body elongated and compressed. A small, erectile, bifid, suborbital spine. Six barbels, one rostral and two maxillary pairs. Dorsal fin situated in the posterior third of the body, anterior to the anal, but posterior to the ventrals.

Geographical distribution.—North-east Bengal, Assam and Barma.

A SINGLE SPECIES.

1. *Acanthophtalmus pangia*. D. 2/6. A. 2/5, Cinnamon colour. N. E. Bengal to Upper Barma.

1. *ACANTHOPHTHALMUS PANGIA*.

Cobitis pangia, Ham. Buch., Fish. Ganges, pp. 355, 394; *Cuv. and Val. xviii, p. 75.

Cobitis cinnamomea, McClell., Ind. Cyp., pp. 304, 435, pl. 51, f. 5. (from H. B. MSS.).

Pangio cinnamomea, Blyth, J. A. S. of B. 1860, p. 169.

Acanthophtalmus Javaiensis, Bleeker, Cyp. Pro., p. 75, and *Atl. Ich. Cyp.* p. 11, t. 2, f. 3.

Acanthophtalmus pangia, Günther, vii, p. 370.

Pangya, Beng. *Nga-tha-lay-doh*, Barmese.

B. III. D. 2/6. P. 10. V. 6-7. A. 2/5. C. 17.

Length of head $1/8$, of caudal $1/8$, height of body $1/8$ of the total length. *Eyes*, minute. *Scales*, distinct. *Colour*, light cinnamon.

Hab.—North-East Bengal, the northern portions of British and Upper Barma. I obtained many specimens at Mandalay, from the canal then in the course of construction. I have also received one from below Darjiling, collected by Mr. Mandelli; the specimen agrees with the others, except in having no scales, but as it is not in a good state, I conclude they may have been rubbed off.

Genus. 3. *LEPIDOCEPHALUS*, *Bleeker.*

Body elongated and compressed. An erectile, bifid, suborbital spine. Six barbels, four rostral, two maxillary. Dorsal fin placed in the posterior two fifths of the body, some distance behind the root of the ventrals. Caudal truncate.

Geographical distribution.—The species of this genus are found in Java and Sumatra.

Genus. 4. *ACANTHOPSIS*, v. *Hass.**Prostheacanthus*, Blyth.

Body very elongated, snout long and compressed. Barbels eight, two being mandibular. A small, bifid, erectile spine, situated in advance of the orbit. Dorsal fin opposite to the ventrals; caudal forked.

Geographical distribution.—Tenasserim and Barma.

A SINGLE SPECIES.

1. *Acanthopsis choirorhynchus*. D. 3/9. A. 3/5. Barma, &c.

1. ACANTHOPSIS CHOIRORHYNCHUS.

Cobitis choirorhynchus, Bleeker, Nat. Tyds. Ned. Ind. vii, p. 95.

Prostheacanthus spectabilis, Blyth, J. A. S. of B. 1860, p. 167.

Acanthopsis choirorhynchus, Bleeker, Atl. Ich. Cyp. p. 9, t. i. f. 3; Günther, Catal. vii, p. 365; Day, Proc. Zool. Soc. 1869, p. 549.

Nga-tha-lay-doh, Barmese.

B. III. D. 3/9. P. 11. V. 7. A. 3/5. C. 11.

Length of head $2/9$, of caudal $1/5$, height of body $1/9$ of the total length. Eyes situated in the posterior $2/5$ of the head. Fins; dorsal arises midway between end of snout and base of caudal, which latter is forked. Colours—brownish, with twelve bands across the back, and an equal number of blotches along the lateral line. Two rows of spots along the dorsal, and three along the anal fins.

Hab. Barma and Sumatra.

Genus. 5. COBITIS, *Artedi*.

Somileptes, Bleeker.

Body elongated and compressed, dorsal profile nearly horizontal. Six barbels on the snout and upper jaw. A small erectile, bifid, suborbital spine. Dorsal fin inserted opposite to the ventral; caudal truncated or rounded.

Geographical distribution.—The Indian species of this genus extend from Orissa through Bengal to Barma.

SYNOPSIS OF SPECIES.

1. *Cobitis gongota*, D. 10. A. 8; barbels short. Assam.
2. „ *guntea*, D. 2/7. A. 2/5; barbels long. Orissa, Bengal and Barma.

1. COBITIS GONGOTA.

Ham. Buch. Fish. Gang. pp. 351, 394; Günther, vii, p. 363.

Cobitis cucara, Ham. Buch. pp. 352, 394; McClelland, Ind. Cyp. pp. 303, 434, t. 51, f. 2, (from H. B.'s MSS.), young; *Cuv. and Val. xviii, p. 70.

Cobitis oculata, McClelland, Ind. Cyp. pp. 303, 433, t. 51, f. 1, from H. B.'s MSS., adult.

? *Cobitis maya*, Sykes, Trans. Zool. Soc. ii, p. 367.

? *Cobitis amnicola*, Cuv. and Val. xviii, p. 68.

Somileptes gongota, *Swainson; Bleeker, Atl. Ich. Cyp. (no description).

B. III. D. 10. V. 7. A. 8.

Barbels moderately developed, extending about half way to below the eyes which are small, prominent, and somewhat before the middle of the length of the head. Fins.—Origin of dorsal opposite the root of the inner ventral ray; caudal rounded. Scales minute. Colours.—An undulated band along the side of the body, giving off vertical bars towards the back. Dorsal and caudal fins with transverse rows of blackish dots.

Hab. Assam.

2. COBITIS GUNTEA.

Ham. Buch. Fish. Gauges. pp. 353, 394; McClelland, Ind. Cyp. pp. 373, 434, t. 51, f. 3. (from H. B.'s MSS.); Cuv. Val. xviii, p. 67; Günther, Catal. vii, p. 363; Day, Proc. Zool. Soc. 1869, p. 383.

Acanthopsis Berdmorei, Blyth, J. A. S. of Beng., 1860, p. 168.

? *Acanthopsis micropogon*, Blyth, l. c. p. 168.

Cobitis Berdmorei, Day, Proc. Zool. Soc. 1869, p. 550.

Kondaturi and *gupkari*, Uria; *Nga-tha-leg-doh*, Burmese.

B. III, D. 2/6-7. P. 9. V. 7. A. 2/5. C. 16.

Length of head $1/6$, of pectoral $1/9$, of caudal $1/6$ of the total length. *Eyes*;—diameter $1/5$ of length of head, 2 diameters from end of snout, and one diameter apart. Body strongly compressed, its height equal to the length of the head. Barbels large, well developed and all longer than the orbit. *Fins*.—Dorsal arises midway between the posterior margin of the orbit and the base of the caudal fin, its first three rays are in advance of the ventrals; caudal generally entire, its centre rays, however, may be somewhat shortened or even lengthened. *Scales* distinct. *Lateral line* absent.—*Colours*; generally dirty yellowish, with a dark band extending from the centre of the snout, and ending in a black ocellus above the middle of the base of the caudal fin; along this band are a series of dark blotches, whilst the back is similarly stained. Dorsal and caudal with rows of dark spots. I have obtained it at Kangra, coloured, as given by McClelland.

Hab.—From Orissa through Bengal and Barma, also in Bombay Presidency. It attains four inches in length.

Genus. 6. LEPIDOCEPHALICHTHYS, *Bleeker*.

Platacanthus, Day.

Body elongated and moderately compressed. Eight barbels, two of which belong to the mandible. A large, erectile, bifid, suborbital spine. Dorsal fin short, commencing opposite, or nearly so, to the ventral; the internal ray of the pectoral fin may be modified into a flat osseous spine; caudal truncate or slightly emarginate.

Geographical distribution.—India, Barma and Ceylon.

SYNOPSIS OF SPECIES.

1. *Lepidocephalichthys thermalis*, D. 3/6. A. 2/5. S. India and Ceylon.
2. *Lepidocephalichthys balgava*, D. 8, A. 7. Wynnaid, Bengal and Assam.

1. LEPIDOCEPHALICHTHYS THERMALIS.

Cobitis thermalis, Cuv. and Val., xviii, p. 78.

Lepidocephalichthys thermalis, Bleeker in Verh. Holl. Maat. Haar. 1864, Cyprin. and Cobit. Ceylon, p. 6, t. i. f. 1; Günther, Catal. vii, p. 364; Day, Proc. Zool. Soc. 1869, p. 383.

Cobitis Mysorensis, Jerdon, M. J. L. and S., 1849, p. 332.

Platacanthus agrensii, Day, Fishes of Malabar, p. 204, pl. 14, f. i.

Assaree, Tam.; *Jubbi cowri*, Uriah; *Bálu*, Hind.

B. III. D. 3/6. P. 7. V. 7. A. 2/5. C. 16.

Length of head $1/11$, of caudal $1/8$, height of body $1/8$ of the total length. Barbels eight, the longest extending to below the anterior margin of the orbit. Suborbital spine, strong. *Fins*.—Origin of dorsal slightly in advance of the ventral, and nearer the root of the caudal than the snout. Caudal slightly emarginate. The inner pectoral ray is modified in adult males into a flat osseous spine which is used for diving down into the mud. *Scales* distinct. I found 2,500 eggs in one female. *Colours*, sandy, with irregular blotches on the lateral line, and others along the back; a black spot generally exists, at the base of the upper half of the caudal fin. Dorsal fin with black spots, caudal with four bands. A dark streak often extends from the eye to the end of the snout.

Hab.—Southern India, the Malabar coast and Ceylon.

2. LEPIDOCEPHALICHTHYS BALGARA.

Cobitis balgara, Ham. Buch., Fish. Gang. pp. 356, 394; Cuv. and Val., xviii p. 74.

Schistura balgara, McClell., Ind. Cyp., p. 307, pl. 53, f. 2. (from H. B.'s MS.).

„ *aculeata*, McClell., l. c. p. 307; Cuv. and Val. xviii, p. 70.

Lepidocephalichthys balgara, Günther, Catal. vii, p. 365; Day, P. Z. S. 1870, p. 70.

? *Cobitis Carnaticus*, Jerdon, M. J. L. and S., 1849, p. 331.

Jubbi cowri, Uriah.

B. III. D. 2/6. V. 7. A. 2/5.

This species closely resembles the preceding. Suborbital spine small, and decreasing with age. Dorsal fin not in advance of the ventrals; caudal cut square. In one male specimen, taken in the Ganges at Haridwar, the inner pectoral ray was of the same character as in the last species. *Colours*, clouded with brown along the back, lighter on the abdomen; the whole of the body dotted over with lines of black spots; a black mark at the top of the base of the caudal. Six to eight rows of spots along the dorsal fin, and about ten sinuous and broken up lines of spots on the caudal.

Hab.—India generally. In some specimens from the Soane river, the mandibular barbels are sub-divided.

Genus. 7. BOTIA, Gray.

Hymenophysa, McClelland.

Body oblong, compressed, with the dorsal profile more or less convex. *Eyes* with a free, circular eyelid. *Barbels* six to eight; if six, all are on the snout and upper jaw, if eight the extra ones are on the mandible. *A* bifid, erectile, suborbital spine present. *Dorsal fin* commences anterior to the root of the ventral; caudal forked. *Air bladder* in two divisions, the

anterior being partially enclosed in a bony capsule, whilst the posterior portion floats free in the abdominal cavity.

Geographical distribution.—Found in the plains and hills in Eastern Bengal, and in both Upper and Lower Barma.

SYNOPSIS OF SPECIES.

1. *Botia nebulosa*, D. 3/12, A. 2/5, Barbels six. *Darjiling.*
2. *Botia dario*, D. 3/10, A. 2/6. Barbels eight. *Bengal, N. W. Provinces, Cachar.*
3. *Botia hymenophysa*, D. 13—15, A. 8. Barbels six. *Barma.*
4. *Botia Almorha*, D. 12, A. 8. Barbels eight. *Almorah.*
5. *Botia rostrata*, D. 12, A. 8. Barbels eight. *Assam.*
6. *Botia Bermorei*, D. 2/9, A. 2/5, Barbels eight. *Darjiling.*
7. *Botia histrionica*, D. 2/8, A. 2/5. Barbels eight. *Pegu.*

1. BOTIA NEBULOSA.

Blyth, J. A. S. of B., 1860, p. 165; Day, Proc. Zool. Soc. 1869, p. 550.

B. III. D. 3/12. P. 13. V. 8. A. 2/5. C. 17.

Length of head $1/5$, of caudal $1/5$, height of body $1/5$ of the total length. *Eyes*,—in the middle of the length of the head, two diameters from the end of the snout, and the same distance apart. *Colours*,—brownish, with a leaden band along the side. Dorsal and caudal barred in spots. An ocellus at the upper margin of the base of the caudal fin.

Hab.—Darjiling.

2. BOTIA DARIO.

Cobitis dario, Ham. Buch., Fish. Ganges, pp. 354, 394, pl. 29, f. 95; *Cuv. and Val., xviii, p. 85; Bleeker, Verh. Bat. Gen. Ned. Ind., xxv. Beng. and Hind. p. 113; McClell. Ind. Cyp. pp. 306, 444, pl. 61, f. 8.

? *Cobitis gato*, Ham. Buch., l. c. pp. 355, 394, pl. xi, f. 96; Cuv. and Val. xviii, p. 84; McClell., Ind. Cyp. pp. 306, 444, pl. 61, f. 9.

Botia dario, Günther, Catal. vii, p. 366.

Sakinga, Panj.; *Bucktea*, Hind.; *Shree-nharo*, Sind.

B. III. D. $\frac{3}{9-10}$. P. 14. V. 8. A. 2/6. C. 19.

Length of head $1/5$, of caudal $1/5$, height of body $1/5$ of the total length. *Eyes* small, situated in the anterior portion of the posterior half of the head, and from $1\frac{1}{2}$ to 2 diameters apart. *Barbels* eight. Posterior portion of air vessel free in the abdominal cavity. *Colours*;—seven or eight oblique bands descend from the back to the abdomen, and two or three, or even more, cross either lobe of the caudal fin. In some specimens, especially from the Jumna, there are about five vertical bands, which arch superiorly so as to coalesce with the next on either side, between each arch is an intermediate vertical blotch. Sometimes there are two bars on the pectoral and the same number on the ventral fins.

Hab.—Bengal, N. W. Provinces and the Panjah, also Cachar. I have generally taken it in the rivers of the plains, except in the Sind hills.

3. *BOTIA HYMENOPHYSA.*

Cobitis hymenophysa, Bleeker, Nat. Tyd. Ned. Ind. iii, p. 602.

Hymenophysa Maccllellandi, Bleeker, Cyp. Prod. p. 63.

Botia hymenophysa, Bleeker, Atl. Ich. Cypr. p. 6, t. i, f. 2; Günther, Cat. vii, p. 368.

Nga-tha-lay-doh and *Shoay-zagay*, Barmese.

B. III. D. $\frac{2}{11-13}$. V. 8. A. 2/6.

Length of head nearly $\frac{1}{4}$ of the total length. *Eyes*—slightly behind the middle of the length of the head. Suborbital spine small, only reaching to below the middle of the eye. *Barbels* six. *Colours* brownish, with eleven darker cross bands.

Hab. The northern portions of British and also Upper Barma.

4. *BOTIA ALMORHÆ.*

Gray, Zool. Misc. 1831, p. 8; Günther, Catal. vii, p. 367.

Botia grandis, Gray and Hardw. Ind. Zool.;* Cuv. and Val., xviii, p. 86; McClell. Cal. J. N. H., ii, p. 586.

B. III. D. 12. V. 8. A. 8.

Length of head $\frac{1}{4}$, height of body nearly $\frac{1}{4}$ of the length, excluding the caudal fin. *Eyes* in the middle of the length of the head, 2 diameters apart. Snout pointed, half as long as the head. Suborbital spine extending nearly or quite to behind the posterior margin of the orbit. *Barbels* eight. Free portion of the tail as deep as long. *Fins*;—dorsal commences midway between the end of the snout and the base of the caudal. *Colours*;—body reticulated with brown, the yellow ground colour being broken up into spots; all the fins with more or less regular brown cross bands, three or four on each caudal lobe, three across the anal fin, and about six across the pectoral.

Hab.—Almorah.

5. *BOTIA ROSTRATA.*

Günther, Catal., vii, p. 367.

B. III. D. 12, P. 14, V. 8, A. 8.

Length of head $\frac{1}{4}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{5}$ of the total length. *Eyes*, diameter $\frac{2}{15}$ of length of head, 4 diameters from end of snout; interorbital space not quite equal to 2 diameters of the orbit. Snout pointed, longer than the remaining portion of the head. Suborbital spine not extending to below the posterior margin of the orbit. *Barbels* eight. Depth of free portion of tail $1\frac{1}{4}$ in its length. *Fins*;—dorsal arises midway between the posterior margin of the orbit and the base of the caudal, which last has sharp lobes. *Colours*;—body with irregular and partly confluent brown cross bands, which enclose variously sized round yellowish spots. Dorsal and anal fins with two, pectoral, ventral, and each lobe of the caudal with three, black cross bands.

Hab.—Bengal and Assam.

6. *BOTIA BERDMOREI.*

Syncrossus Berrmorei, Blyth, J. A. S. of Bengal, 1860, p. 166.

Botia Berrmorei, Day, Proc. Zool. Soc., 1869, p. 549.

B. III. D. 3/9, P. 13, V. 8, A. 2/5, C. 17.

Length of head $1/5$, of caudal $1/5$, height of body $1/5$ of the total length. *Eyes*; diameter $1/5$ of length of head, 2 diameters from end of snout and apart. Suborbital spine damaged in the unique example. *Barbels* eight. *Fins*; dorsal commences midway between the snout and the posterior margin of the anal fin. *Colours*, brownish, with a leaden band along the side. Dorsal and caudal barred in spots. An ocellus at the upper margin of the base of the caudal fin.

Hab.—Darjiling and Bengal generally.

7. *BOTIA HISTRIONICA.*

Blyth, J. A. S. of Bengal, 1860, p. 166; Day, Proc. Zool. Soc. 1869, p. 550.

B. III. D. 2/8, P. 15, V. 8, A. 2/5, C. 19.

Length of head $1/4$, of caudal $1/5$, height of body $1/4$ of the total length. *Eyes*; diameter $1/5$ of length of head, $2\frac{1}{2}$ diameters from end of snout, 2 diameters apart. Suborbital spine not very strong, extending to opposite the posterior margin of the orbit. *Barbels*, eight. *Fins*; dorsal commences nearer to the caudal than to the end of the snout. Caudal forked. *Colours*, olive, with five dark vertical bands on the body, and two or three on the head. All the fins with two broad brown bands.

Hab.—Pegu.

Genus. *JERDONIA*,* Day.

Platacanthus, sp. Day.

Body elongated, and moderately compressed. Eight barbels, two of which are mandibular. A free, erectile, bifid, suborbital spine. Dorsal fin long (twenty-seven branched rays), commencing before the ventrals; the internal ray of the pectoral fin modified into a flat osseous spine; caudal slightly emarginate.

Geographical distribution. Madras Presidency.

THE SINGLE SPECIES.

1. *Jerdonia maculata*, D. 3/27, A. 3/6. Madras.

1. *JERDONIA MACULATA.*

Platacanthus maculatus, Day, Proc. Zool. Soc. 1867, p. 941, and 1870, p. 700.

B. III. D. 3/27, P. 5/1, V. 8, A. 3/6, C. 21.

Length of head $2/11$, of caudal $1/5$, height of body $1/6$ of the total length. *Eyes*; diameter $1/6$ of length of head, two diameters from end of snout. Dorsal profile ascends to the commencement of the dorsal fin. Suborbital spine reaches to beneath the anterior third of the orbit. *Scales*, small,

* This name has been also applied in Conchology and Ornithology, [Editor.]

but distinct. *Colours*, greyish, becoming dirty white along the abdomen. A dark lateral band extends from the eye to the tail; along its first half are three black spots, whilst the whole extent of the back is irregularly lined. *Fins*, yellow. Dorsal with four black bands. Caudal with three bands and a dark margin. A black mark at the base of the tail, with a smaller one above and another below it.

Hab.—Madras.

B. *Without an erectile spine near the orbit.*

Genus. 9. NEMACHEILUS, v. Hass.

Aconra and *Aconrus*, Swains.

Acanthocobitis, Peters.

Body elongated. Dorsal profile nearly horizontal. Barbels eight or six, when the former number is present, the extra pair belongs to the posterior nostril, none on the mandibles. No spine on the head. Dorsal fin of moderate length, or short, situated opposite the ventrals.

This genus has been subdivided into those species which have upwards of twelve dorsal rays, (*Acanthocobitis*), and those with less than twelve. As this arbitrary division is not a natural one, it is not adopted here. Another subdivision has been instituted into those in which the tail is forked, and those in which it is entire. The genus may, however, be subdivided into those with eight and those with six barbels.

Geographical distribution.—Fresh waters of India, Ceylon, and Barma.

SYNOPSIS OF SPECIES.

A. *With eight barbels.*

1. *Nemacheilus Feezardi*, D. 2/7, A. 2/5. Greenish, with small dark blotches. *Pána* (in the Dakhin).

B. *With six barbels.*

2. " *paronaceus*, D. 2/15, A. 2/5. Body barred; caudal wedge-shaped. *Assam* and *Tenasserim Provinces*.
3. " *urophthalmus*, D. 14, A. 7. Body with cross bands; caudal emarginate, and with rounded angles. *Ceylon*.
4. " *botia*, D. 3/11, A. 2/5. Body irregularly blotched. Caudal emarginate. *Throughout India, except in the South*.
5. " *Rupelli*, D. $\frac{2-3}{10}$, A. 8. Short bars along the lateral line. Caudal emarginate. *Pána*.
- 6.* " *moreh*, D. $\frac{2}{10}$, A. 7. Bars along the side of the body. Caudal wedge-shaped. *Pána*.
- 7.* " *monoceros*, D. 12, A. 6. Caudal and dorsal fins barred. Caudal rounded. *Assam*.
8. " *aureus*, D. 2/10, A. 2/5. Immature blotched; caudal and dorsal fins barred. Caudal forked. *Jabalpur*.
9. " *rupicola*, D. $\frac{2}{8-9}$, A. 2/5. Eleven to seventeen brown bands on

the body, as wide or wider than the ground colour. Dorsal and caudal banded or spotted. Caudal forked. *India generally, except Sind and the South.*

10. „ *semistriatus*, D. 3/8, A. 2/5. Irregular spots and bars on the body and fins. Caudal forked. *Nilgherries.*

11.* „ *tennicauda*, D. 11, A. 7. Mottled and spotted with brown. Caudal forked. *Tibet.*

12. „ *zonalternans*, D. 2/9, A. 2/5. Ten to eleven vertical bands, with intermediate ones superiorly. Dorsal and caudal spotted. Caudal entire. *Tenasserim provinces.*

13. „ *Ladacensis*, D. 11, A. 7. Nine blackish bars across the back. Caudal rounded. *Tibet.*

14. „ *zonata*, D. 3/7, A. 1/5. Eleven to thirteen dark zones encircle the back, not meeting on the abdomen and not half the width of the ground colour. Caudal forked. *Assam, Bengal, N. W. Provinces.*

15. „ *sulfureus*, D. 2/8, A. 2/5. Ten brown zones encircling the body, and wider than the ground colour. Caudal slightly forked. *Upper Assam and Burma.*

16. „ *sinuatus*, D. $\frac{2}{8-9}$, A. 2/5. Vertical brown bands, with shorter intermediate ones. Dorsal and caudal barred. Caudal cut square. *Wynaad.*

17. „ *Stoliczka*, D. 3/7, A. 2/5. Spotted and marbled with brown. Caudal slightly emarginate. *Tibet.*

18. „ *chloasoma*, D. 3/6, A. 2/5. A darkish line long the middle of the body. Caudal cut square. *Upper Assam and Kistna river.*

19. „ *phoxocheila*, D. 2/9, A. 2/5. *Upper Assam.*

20. „ *serpentarius*, D. 2/8, A. 2/5. A dark band from snout through the eye to the base of dorsal fin.

21. „ *microps*, D. 11, A. 7. Sixteen to seventeen cross bands on the back, and vermiculated stripes on the body. Caudal slightly emarginate. *Tibet.*

22. „ *striatus*, D. 2/8, A. 2/5. Numerous narrow vertical bands. Caudal slightly forked. *Wynaad.*

23. „ *nagah*, D. 2/7, A. $\frac{2}{5-6}$. Fifteen brown bands, one third as wide as the ground colour. Caudal forked. *Cossy river.*

24. „ *notostigma*, D. 2/8, A. $\frac{2-3}{6}$. Dark blotches. Caudal forked. *Ceylon and Southern India.*

25. „ *montanus*, D. 3/7, A. 2/5. Twelve vertical brown bands. Caudal forked. *Himalayas.*

26. „ *septlopterus*, D. 2/7, A. 2/5. Eleven to fifteen irregular bands. Caudal slightly emarginate. *Himalayas, Assam and Cochin China.*

27. „ *sacana*, D. $\frac{2-3}{8}$, A. 2/5. Ten to twelve very narrow white bands. Caudal slightly emarginate. *Ranigunj in Bengal.*

28. „ *Beavani*, D. 10, A. 7. Dark bands, wider than interspace. Caudal forked. *Cossy river.*

29. „ *Denisonii*, D. $\frac{2}{8-9}$, A. 2/5. Nine to twelve yellowish olive vertical zones. Caudal forked. *Nilgherry and Coorg hills.*

30. „ *triangularis*, D. 2/8, A. 2/5. Seven black edged triangular bands. Caudal emarginate. *Travancore hills.*

- 31.* „ *marmoratus*, D. 10, A. 7. Mottled with brown. Caudal somewhat convex. *Kashmir*.
 32. „ *Griffithii*, D. 10, A. 7. Marbled with brownish black. Caudal emarginate. *Assam*.
 33. „ *conica*, D. 2/8, A. 2/5. About thirteen blotches along the side. Caudal forked. *N. E. Bengal, Panjab and Assam*.
 34. „ *Guentheri*, D. 2/8, A. 2/5. Reticulated with brown. Caudal lobed. *Nilgherries*.
 35. „ *Blythii*, D. 2/7, A. 2/5. Brownish. Caudal forked. *India?*
 36. „ *Butanensis*, D. 9, A. 7. Caudal rounded. *Bután*.
 37. „ *rubripinnis*, D. 2/6, A. 2/5. Nine vertical bars. Caudal emarginate. *Malabar*.
 38.* „ *lurio*, D. 8, (10 ?) A. 7. Spotted and blotched. Caudal emarginate. *Assam*.
 39.* *guttatus*, D. 8. Dark blotches. Caudal entire. *Upper Assam*.

1. NEMACHEILUS EVEZARDI.

B. III. D. 2/7, P. 12, V. 8, A. 2/5, C. 17.

Length of head $1/5$, of caudal $1/5$, height of body $1/6$ of the total length. *Eyes* in the commencement of the anterior half of the head. *Head* broad, its width equalling its length without the snout, which is rounded. No spine on the head. *Barbels* well developed, one pair of nasal, two pair of rostral and one pair of maxillary. *Fins*; dorsal commences opposite to the ventrals and midway between the anterior margin of the orbit and the base of the caudal; upper edge of dorsal fin slightly convex; pectoral longer than the head, and reaching three quarters of the distance to the base of the ventral. Caudal rounded. *Scales*, very minute. *Lateral line*, absent. *Colours*, greenish with small dark blotches.

Hab.—Pána. A single specimen received amongst a collection which Colonel Evezard assisted in procuring.

2. NEMACHEILUS PAVONACEUS.

Cobitis pavonacea, McClelland, Ind. Cyp., pp. 305, 437, pl. 52, fig. 1; *Cuv. and Val., xviii, p. 37.

Nemacheilus pavonaceus, *Günther, Catal. vii, p. 348.

Cobitis semizonata, Blyth, J. A. S. of B., 1860, p. 171.

Nemacheilus semizonatus, *Günther, Catal. vii, p. 348.

Cobitis rubidipinnis, Blyth, l. c., p. 170.

Nemacheilus rubidipinnis, *Günther, Catal. vii, p. 348.

Acanthocobitis longipinnis, Peters, Mon. Ak. Wiss. Berl. for 1861.

B. III. D. $\frac{2-3}{12-13}$, V. 8, A. 2/5, C. 19.

Length of head $1/5$, of caudal $1/6$, height of body $1/6$ of the total length. *Eyes*; diameter $2/9$ of length of head, 2 diameters from end of snout. In some specimens the pre-orbital forms a blunt spine. *Fins*;

dorsal commences nearer to the snout than to the base of caudal, which latter is slightly emarginate. *Colours*; body crossed by about twenty half bars of a darkish grey; a dark ocellus surrounded by a light margin exists upon the upper portion of the base of the caudal fin. Dorsal and caudal barred.

Hab.—Assam and Tenasserim Provinces.

3. NEMACHEILUS TROPHITILMUS.

Günther, Catal. vii, p. 348.

B. III. D. 14, P. 13, V. 8, A. 7, C. 19.

Length of head, of caudal, and height of body $1/5$ of the total length. *Eyes*; diameter $1/4$ of length of head, $1\frac{1}{2}$ diameters from end of snout. Body, compressed. Free portion of tail as deep as long. Pre-orbital terminates posteriorly in a slight and obtuse projection below the eye, either moveable, or concealed by the skin. *Fins*; origin of dorsal midway between the snout and the base of the caudal, which latter is emarginate with rounded angles. *Scales*, distinct. *Lateral line*, incomplete. *Colours*; from ten to thirteen dark brown cross bands, somewhat lighter in the middle, and separated from one another by narrow yellow streaks of ground colour. Head spotted with brown. A black, white edged, ocellus on the base of the upper caudal lobe. Dorsal and caudal with six transverse series of black dots.

Hab.—Ceylon.

4. NEMACHEILUS BOTIA.

Cobitis botia, Ham. Buch., Fish. Ganges, pp. 350, 394; *Cuv. and Val., xviii, p. 72.

„ *bilturio*, Ham. Buch., l. c. pp. 358, 395; *Cuv. and Val., xviii, p. 35.

„ *bimacronata*, McClell., Ind. Cyp., pp. 304, 435, pl. 51, fig. 4, (from H. B.'s MS.)

„ *ocellata*, McClell., l. c. pp. 304, 436, pl. 51, fig. 6, (from H. B.'s MS.)

Nemacheilus botia, Günther, Catal. vii, p. 349; Day, P. Z. S., 1869, p. 382.

Bil-turi, Assam; *Soon-da-lee*, Panj.

B. III. D. 3/11, P. 11, V. 8, A. 2/5, C. 17.

Height of body $1/6$ of the total length. Pre-orbital has in some specimens a projection which is moveable below the orbit, (*N. botia*), whilst in others it is entirely concealed by the skin (*N. bilturio*). *Colours*, greyish, with from 12 to 14 short bars on the lateral line, and a number of irregular blotches above it. Dorsal fin spotted; caudal with about seven irregular bars, and a black ocellus on the upper portion of the base of the fin.

Hab.—Throughout India, except its most southern portion.

The *Cobitis scaturigina*, McClell., described from one of H. B.'s drawings may be this species, badly delineated, the ocellus at the base of the caudal and the bars on that fin not being distinctly shown.

5. NEMACHEILUS RUPELLI.

Cobitis Rupelli (?) Sykes, Trans. Zool. Soc. ii, p. 366, pl. 64, fig. 1.

B. III. D. $\frac{2-3}{10}$, P. 12, V. 8, A. 8, C. 19.

Length of head $\frac{2}{11}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{5}$ of the total length. *Eyes*, slightly before the middle of the length of the head, $2\frac{1}{4}$ diameters from end of snout. Head pointed, four moderately developed rostral and two maxillary barbels. *Fins*; dorsal arises midway between the snout and base of the caudal which is slightly forked; the upper margin of the dorsal fin straight. *Scales*, moderately developed. *Lateral line*, distinct. *Colours*, greenish yellow except the abdomen which is white, short brown bars along the lateral line, and the rays of the dorsal and anal barred. Caudal with four posteriorly directed V-shaped brown bars. A black spot at the base of the upper caudal lobe.

Hab.—Rivers near Púna (in the Dakhin).

6.* NEMACHEILUS MOREH.

Cobitis moreh, Sykes, Trans. Zool. Soc. ii, p. 366.

B. III. D. $\frac{2}{10}$, P. 12, V. 8, A. 7, C. 19.

Head said to be more pointed than in the last species. *Fins*; tail wedge-shaped. *Scales*, minute. *Colours*; more dark blotches on the head than in *N. Rupelli*. The transverse dark marks on the body are not (? now) arranged along the lateral line and over the back, alternating with each other. The fins have a very light orange tinge.

Hab.—Mota Mola river at Púna.

7.* NEMACHEILUS MONOCEROS.

Cobitis monoceros, McClell., Ind. Cyp., pp. 395, 438, pl. 52, fig. 2; *Cuv. and Val., xviii, p. 38.

Nemachilus monoceros, *Günther, Catal. vii, p. 358.

B. III. D. 12, P. 12, V. 8, A. 6, C. 18.

Length of head $\frac{1}{4}$ of the total without the caudal fin. A short blunt spine on the snout. *Fins* (according to the figure); upper margin of dorsal nearly straight, caudal rounded. *Colours*; body greenish yellow with a silvery lustre, opercles tinged with green. Caudal and dorsal streaked with numerous small brown bars.

Hab.—Assam.

8. NEMACHEILUS AUREUS.

B. III. D. $\frac{2}{10}$, P. 15, V. 8, A. $\frac{2}{5}$, C. 19.

Length of head, of caudal and pectoral $\frac{1}{5}$, height of body $\frac{2}{13}$ of the total length. *Eyes*, large, not prominent, situated in the middle of the length of the head and $1\frac{1}{2}$ diameters from the end of snout. Snout very

obtuse, the pre-orbital (in the adult) ending posteriorly in a free blunt process. Width of head two-thirds of its length. Free portion of tail as high as long. *Barbels* elongated, the internal rostral pair reaching to the eye, the external to the middle of the orbit, and the maxillary to beyond its hind margin. *Fins*; dorsal commences somewhat in advance of the ventrals, and in the adult midway between the snout and the base of the caudal, but in the immature nearer to the former; the pectoral reaches to above the ventral, and the anal when laid flat extends to the root of the caudal, which last is forked in its last fourth with sharp lobes. *Scales*, very distinct. *Lateral line*, ceases opposite the posterior end of the base of the dorsal. *Colours*, light, with a green tinge and destitute of marks on the body in the mature, but in the young there is a row of seven or eight dark blotches along the middle of the body as wide as the ground colour, whilst superiorly there are intermediate blotches extending downwards from the back. Fins and the barbels of a deep orange colour, a dark ocellus at the base of the upper caudal lobe, and 5 or 6 ∇ shaped bars on the tail. Several rows of black spots along the dorsal fin. A dark streak from the eye down the snout.

Hab.—Jabalpūr, specimens obtained in September 1871 were full of ova.

9. NEMACHEILUS RUPICOLA.

Schistura rupicola, McClell., J. A. S. of B., vii, pl. pl. 55, fig. 3, and Ind. Cyp. pp. 309, pl. 57, fig. 3.

Cobitis rupecula, *Cuv. and Val., xviii, p. 40.

Nemachilus rupecula, Günther, vii, p. 351.

B. III. D. $\frac{2}{8-9}$, P. 10, V. 7, A. $\frac{2}{5}$, C. 17.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{5}$ to $\frac{1}{6}$, height of body $\frac{1}{5}$ to $\frac{1}{6}$ of the total length. *Eyes* small, diameter $\frac{1}{7}$ of the length of the head and situated in the middle of its length, or more anteriorly in young specimens. *Head*, broad, depressed. *Barbels*, short but stout. *Fins*; dorsal commences midway between the posterior margin of the orbit and the base of the caudal fin. Pectoral reaches above half way to the root of the ventral; caudal with rounded lobes in the adult, more pointed in the young. Free portion of the tail as deep as long. *Scales*, minute. *Colours*; eleven to seventeen vertical brown bands, each from as wide to three times as broad as the buff interspaces. Caudal with a black band at its base, and four or five irregular bars. Dorsal with a black base and a black mark between its two first rays, the fin also spotted with black, the other fins with badly marked bands.

Hab.—Bengal, N. W. Provinces, Panjáb, Assam, and the Himalayas; attaining $3\frac{1}{2}$ inches in length.

The appearance of this fish alters considerably with age. In the young the head is only $\frac{2}{3}$ as wide as long, but the two dimensions are equal in the adult.

10. NEMACHEILUS SEMIARMATUS.

Day, Proc. Zool. Soc. 1867, p. 286; Günther, Catal. vii, p. 353.

B. III. D. $\frac{3}{8}$, P. 12, V. 7, A. $\frac{2}{5}$, C. 18.

Length of head $\frac{2}{11}$, of caudal $\frac{2}{9}$, height of body $\frac{2}{11}$ of the total length. *Eyes*; diameter $\frac{1}{4}$ of length of head, $1\frac{1}{2}$ diameters from end of snout, 1 diameter apart. A cartilaginous knob on pre-orbital. Free portion of tail as deep as long. *Fins*; origin of dorsal nearer the snout than the base of the caudal. Pectoral as long as the head, the basal half of some of its rays being generally stiffened by osseous matter. Caudal lobed in its last half. *Scales*, indistinct. *Lateral line*, complete. *Colours*, light brown, with numerous irregularly shaped spots and bars proceeding from the back towards the lateral line; head brownish, with a dark line from the snout through the orbit. Dorsal fin with about three rows of dark spots; caudal irregularly barred; a dark line runs along the centre of the back.

Hab.—Bowani and Sigur rivers along the base of the Nilgherry hills; also imported into tanks on those mountains.

11.* NEMACHEILUS TENUICAUDA.

Cobitis tenuicauda, Stein., Verh. Zool.-bot. Ges. Wien, 1866, p. 792, t. 17, fig. 3.

Nemacheilus tenuicauda, Günther, Catal. vii, p. 357.

B. III. D. 11, V. 8, A. 7.

Length of head nearly $\frac{1}{5}$, height of body less than $\frac{1}{5}$ of the length, without the caudal. Free portion of tail very low, its depth being rather less than $\frac{1}{3}$ of its length. *Fins*; upper margin of dorsal oblique, with its anterior angle rounded; it arises nearer to the root of the caudal than to the end of the snout. Pectoral extends rather above half the distance to the base of the ventral. Caudal emarginate. *Scales*, absent. *Colours*; upper part of side, dorsal and caudal fins irregularly mottled with brown, and some spots along the sides.

Hab.—Tibet.

12. NEMACHEILUS ZONALTERNANS.

Cobitis zonalternans, Blyth, J. A. S. of B. 1860, p. 172.

Nemacheilus zonalternans, Day, Proc. Zool. Soc., 1869, p. 551.

B. III. D. $\frac{2}{9}$, A. $\frac{2}{5}$.

Eyes of moderate size, rather above one diameter from end of snout. *Fins*; dorsal commences rather nearer the snout than the base of the caudal, which latter is entire. *Scales*, distinct. *Colours*; ten to eleven bars descend down the lower two-thirds of the body to the abdomen, with intermediate half bands superiorly between them. Dorsal and caudal fins spotted in bands.

Hab.—Tenasserim Provinces.

13. *NEMACHEILUS LADACENSIS.*

Nemacheilus ladacensis, Günther, Catal. vii, p. 356.

B. III. D. 11, V. 8, A. 7.

Length of head $\frac{1}{5}$, height of body less than $\frac{1}{5}$ of the total length without the caudal fin. *Eyes*; diameter $\frac{1}{5}$ of length of head, 2 diameters from end of snout. Snout obtuse. Free portion of tail one-fourth as high as long. *Fins*; upper margin of dorsal oblique, with its anterior angle rounded, commencing nearer the end of the snout than the root of the caudal, which latter is rounded. Pectoral extends rather above half way to the base of the ventral. All the fins are somewhat elongated. *Scales*, absent. *Colours*, reddish olive, with about nine blackish bars across the back, a few small scattered spots upon the sides and caudal fin.

Hab.—Tibet, from whence the single typical specimen, three inches long, was procured.

14. *NEMACHEILUS ZONATA.*

Schistura zonata, McClell., Ind. Cyp., pp. 308, 441, pl. 53, fig. 1.

Cobitis zonata, *Cuv. and Val., xviii, p. 39.

B. III. D. $\frac{3}{7}$, P. 11, V. 8; A. $\frac{1}{5}$, C. 17.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{6}$, of dorsal fin a little above $\frac{1}{6}$ of the total length. *Eyes*; diameter $\frac{2}{7}$ of length of head, and situated in the middle of its length. Snout rather compressed. *Barbels* well developed, being about as long as the orbit. *Fins*; dorsal commences rather nearer the base of the caudal, than the end of the snout. Caudal forked. *Colours*; eleven to thirteen dark zones encircle the back, but they do not meet on the abdomen, and are not half the width of the ground colour.

Hab.—Upper Assam, Bengal, and N. W. Provinces.

15. *NEMACHEILUS SUBFUSCUS.*

Schistura subfusa, McClell., Ind. Cyp. pp. 308, 443, pl. 53, fig. 5.

Cobitis subfuscus, *Cuv. and Val., xviii, p. 80.

Nemacheilus subfuscus, *Günther, Catal. vii, p. 351.

Cobitis cincticauda, Blyth, J. A. S. of B. 1860, p. 172.

Nemacheilus cincticauda, Day, Proc. Zool. Soc. 1869, p. 552.

B. III. D. $\frac{2}{8}$, P. 11, V. 8, A. $\frac{2}{5}$, C. 19.

Length of head $\frac{1}{5}$, of pectoral $\frac{1}{5}$, of caudal $\frac{2}{11}$, height of body $\frac{1}{7}$ of the total length. *Eyes*, situated in the middle of the length of the head, 3 diameters from end of snout, $1\frac{1}{2}$ diameters apart. *Barbels* well developed, and nearly as long as the orbit. No projection on the pre-orbital. The free portion of the tail longer than high. *Fins*; dorsal with its upper margin straight, it arises midway between the posterior margin of the orbit and the base of the caudal, which last is slightly emarginate. Pectoral extends

three-fourths of the distance to the ventral. *Scales*, minute. *Colours*, yellowish, with ten regular brown zones encircling the body and broader than the ground colour; a dark bar at the base of the caudal, and a dark band between the eye and the mouth. Dorsal with some black spots.

Having obtained numerous specimens in Barma, since my paper in the Proc. Zool. Society was published, I have been enabled to compare them with Mr. Blyth's typical one, and McClelland's description and figure, leaving no doubt as to their specific identity.

Hab.—Upper Assam and Barma.

16. NEMACHEILUS SINUATUS.

Day, Proc. Zool. Soc. 1870, p. 371.

B. III. D. 2/8-9, P. 12, V. 8, A. 2/5, C. 18.

Length of head $1/5$, of caudal $1/6$, height of body $1/6$ of the total length. *Eyes*, situated in the middle of the length of the head, 2 diameters from end of snout, $1\frac{1}{2}$ diameters apart. *Barbels*, long and thin. *Fins*; dorsal arises slightly in advance of the ventrals, and midway between the snout and the base of the caudal, which last is cut square, but some of the outer rays are rather the shortest. *Scales*, distinct. *Lateral line* ceases opposite the end of the dorsal fin. *Colours*, olive, with irregular vertical brown bands, having shorter intermediate ones. A black ocellus at the base of the upper portion of the caudal fin. Dorsal yellow, with three or four rows of black spots. Caudal orange with four 7 shaped bars, the centre of each of which however is inverted.

Hab.—Wynaad.

17. NEMACHEILUS STOLICZKÆ.

Cobitis Stoliczka, Stein., Verh. Zool.-bot. Ges. Wien, 1866, p. 793, t. 14, fig. 2.

Nemachilus Stoliczka, *Günther, Catal. vii, p. 360.

B. III. D. 3/7, V. 8, A. 2/5.

Length of head $1/5$ of total without the caudal, height of body much less. *Eyes*; diameter $2/11$ of length of the head. *Fins*; origin of dorsal nearer root of caudal than end of snout, its upper margin oblique with the anterior corner rounded. Caudal slightly emarginate. Pectoral extends a little above half way to the root of the ventral. *Scales*, absent. *Colours*, darkish, spotted and marbled all over with a darker colour.

Hab.—Tibet, 15,500 feet above the level of the sea.

18. NEMACHEILUS CHLOROSOMA.

Cobitis chlorosoma, McClelland, Ind. Cyp., pp. 305, 437, t. 52, fig. 3; *Cuv. and Val., xvii; p. 38.

Wattara, Tel.

B. III. D. 3/6, P. 11, V. 7, A. 2/5, C. 16.

Length of head $1/7$, of caudal $2/11$, height of body $2/11$ of the total length. *Eyes*, high up, diameter $2/9$ of length of head, 2 diameters from end of snout, $\frac{1}{2}$ a diameter apart. Snout somewhat swollen, barbels about equal in length to the diameter of the eye. *Fins*: dorsal arises midway between the posterior margin of the orbit and the base of the caudal. The anal in the last third of the body. Caudal cut square. *Scales*, distinct. *Lateral line*, absent. *Colours*, straw coloured with a badly developed dark line along the centre of the body, and irregular greyish pencillings along the back. Pectoral, ventral, and anal yellowish; dorsal with several irregular and badly marked black bands. Caudal with a dark mark at its base, and several irregularly directed vertical bands.

Hab.—Upper Assam. The specimen from which this description is drawn up was taken at the Bezwada anicut on the Kistna, and it agrees moderately well with McClelland's figure and definition.

19. NEMACHEILUS PHOXOCHEILA.

Cobitis phoxocheila, McClelland, Ind. Cyp., pp. 305, 439, t. 52, fig. 4; *Cuv. and Val., xvii, p. 79.

Nemachilus phoxocheila, *Günther, Cat., vii, p. 361; Day, Proc. Zool. Soc. 1869, p. 551.

B. III. D. $2/9$, A. $2/5$.

Length of head more than height of body. *Eyes*, situated before the middle of the length of the head, and 2 diameters from end of snout. Snout rather depressed, no ridge between the orbits. *Barbels*; four rostral, as long as the diameter of the orbit, and two shorter maxillary ones. *Fins*: dorsal commences midway between the anterior margin of the orbit and the base of the anal, and slightly in advance of the ventral. The pectoral does not reach the ventral, nor the latter the anal. *Scales*, minute. The two specimens from which this description was drawn up were labelled as above in the Calcutta Museum, but their colours were bleached, whilst their tails were destroyed. The caudal fin should be rounded and entire.

McClelland's description gives an apparently different fish; he says that the head is raised obliquely as in the *Perilampus*, but this is a frequent *post-mortem* appearance; the ridge between the eyes being sharp and bony. *Colours*, above clouded with brown, silvery beneath, with a dark nebulous streak along the side. Several small bars across the caudal fin.

D. 8, P. 8, V. 6, A. 6, C. 16, and according to McClelland only four barbels.

Hab.—Mishmi mountains in Northern Assam.

20. NEMACHEILUS SERPENTARIUS.

Day, Proc. Zool. Soc. 1869, p. 551.

B. III. D. $2/8$, P. 17, V. 9, A. $2/5$, C. 19, L. 1. 64, L. tr. 12/17.

Length of head $1/5$, of caudal $1/5$, height of body nearly $1/5$ of the total length. *Eyes*, small, behind the middle of the length of the head,

about four diameters from end of snout, and three diameters apart. *Snout*, pointed. *Barbels*, short, the maxillary pair the longest. Upper lip fimbriated. *Scales*, distinct, with a raised keel along their centre. *Lateral line*, complete. *Fins*; dorsal arises slightly in advance of the ventrals, and midway between the snout and the base of the caudal fin, its upper margin straight. Pectoral reaches two-thirds of the distance to the ventral, and the latter above half way to the anal. Caudal deeply emarginate, its lobes pointed. *Colours*, brownish, with a wide dark chestnut band passing from the snout through the orbit to the base of the dorsal fin, which last has a black centre. Caudal deep brown with white margins. A black bar across the base of the ventrals.

Hab.—Doubtful, three specimens are in the Calcutta Museum.

21. NEMACHEILUS MICROPS.

Cobitis microps, Stein, Verh. Zool.-bot. Ges. Wien, 1866, p. 794, t. 13, f. 3.

Nemachilus microps, *Günther, Catal. vii, p. 357.

B. III. D. 11, V. 8, A. 7.

Length of head $1/5$ of total without the caudal; height of body less. *Eyes*, small, in middle of length of head. *Head*, broad, depressed. *Snout*, thick. *Fins*; dorsal arises rather nearer the root of the caudal than the end of the snout. Caudal slightly emarginate. Pectoral reaches half way to the base of ventral. *Scales*, absent. *Colours*; body with many narrow, vermiculated transverse stripes, which on the back coalesce, and form sixteen or seventeen broad cross bands.

Hab.—Tibet, 16,000 feet above the sea.

22. NEMACHEILUS STRIATUS.

Day, Proc. Zool. Soc. 1867, p. 347; *Günther, Catal. vii, p. 353.

Cul-irum, and *Kul nakura*, Tamil.

B. III. D. 2/8, P. 11, V. 8, A. 2/5, C. 17.

Length of head, pectoral and caudal, each $1/7$ of the total length. Height of body $1/11$ of the total length. *Eyes*, diameter nearly $1/4$ of length of head. *Barbels*, well developed, the external rostral pair reaching the posterior, and the internal to the anterior margin of the nostrils, to beneath which same place the maxillary ones extend. *Fins*; dorsal arises slightly in advance of the ventrals, and midway between the snout and the posterior extremity of the caudal fin; the caudal slightly lobed at its posterior extremity. *Scales*, well developed. *Lateral line*, well marked. *Colours*, light reddish brown, with narrow vertical bands darker than the ground colour, and most distinct in the posterior portion of the body, where there are sixteen posterior to the commencement of the dorsal fin, and several more between that and the head, which last is marked all over with black lines

and spots. A black band at the base of the caudal fin. Dorsal brilliant orange, with a black edge having a light external margin, and a dark base. Anal orange with some dull black spots; caudal likewise yellow and spotted.

Hab.—Wynaad at 3,000 feet elevation. It grows to $2\frac{1}{2}$ inches in length.

23. NEMACHEILUS MUGAH.

Day, Proc. Zool. Soc. 1869, p. 382.

Mugah, Beng.

B. III. D. $\frac{2}{7}$, P. 11, V. 8, A. $\frac{2}{5-6}$, C. 17.

Length of head $\frac{1}{5}$, of pectoral $\frac{1}{7}$, of caudal $\frac{1}{5}$, height of body $\frac{2}{13}$ of the total length. *Eyes*, diameter $\frac{1}{5}$ of length of head, two diameters from end of snout, $1\frac{1}{2}$ diameters apart. Body with compressed sides. The free portion of the base of the caudal as long as high. Snout pointed; no enlargement of pre-orbital. *Barbels*, all about as long as the eye. *Fins*; dorsal arises midway between snout and base of caudal, its upper margin is straight; pectorals extend above half way to the base of ventrals; caudal emarginate in its posterior length. *Scales*, small, but distinct; there being twelve rows above the lateral line, and thirteen between it and the base of the ventral fin. *Lateral line*, commences by two roots, which soon coalesce, when it is continued to the base of the caudal. *Colours*, yellowish, with a green tinge; about fifteen brown bands, one-third as wide as the ground colour, pass across the back and descend on either side below the lateral line; a few near the head, and some in the posterior third of the body are interrupted. Upper surface of head marbled with black. Fins immaculate, but the two anal rays are black anteriorly, and there are also slight black marks near the end of the ventrals and on the outer side of the pectorals. Rostral barbels orange.

Hab.—Cossy river at Midnapore, where it attains two inches in length.

24. NEMACHEILUS NOTOSTIGMA.

? Bleeker, Verh. Holl. Maatsch. Haarl, 1864, Cobit. et Cyp. Ceylon, p. 5, t. 1, fig 2; Günther, Catal. vii, p. 352.

B. III. D. $\frac{2}{8}$, V. 7, P. 13, A. $\frac{2-3}{5}$, C. 19.

Length of head $\frac{1}{5}$, of pectoral $\frac{1}{7}$, of caudal $\frac{1}{4}$, height of body $\frac{1}{8}$ of the total length. *Eyes*, diameter $\frac{1}{4}$ of length of head, $1\frac{1}{2}$ diameters from end of snout. Body elongated and compressed. Pre-orbital somewhat moveable and slightly enlarged at its posterior angle close to the orbit. *Barbels*, all longer than the eye. *Fins*; dorsal highest in front, it arises midway between snout and base of the caudal fin, being a little in advance of the ventrals; caudal with pointed lobes in its posterior third.

Scales, moderately distinct. *Colours*, brownish with dark blotches, almost bands, on the upper half of the body, and some also upon the fins. Occiput nearly black. A dark mark at the base of the caudal, which is irregularly banded. A black spot at the base of the anterior dorsal rays, and a bar across the lower portion of the fin.

Hab.—Cauvery above Trichinopoly, also ? Ceylon.

25. NEMACHEILUS MONTANUS.

Schistura montana, McClell., Ind. Cyp. pp. 307, 440, t. 57, fig. 1.

Cobitis montana, *Cuv. and Val., xviii, p. 69.

? *Nemacheilus montanus*, Günther, Catal. vii, p. 350.

Saant-al, Panj.

B. III. D. 3/7, P. 10, V. 8, A. 2/5, C. 18.

Length of head 1/6, of caudal 1/6, height of body 1/8 of the total length. *Eyes*, small, in the middle of the length of the head. *Head*, rather above half as wide as long. Free portion of tail as deep as long. *Fins*; the dorsal's upper margin straight and oblique, it commences midway between the anterior margin of the orbit and the base of the caudal fin; pectoral extends a little above half the distance to the ventral. Caudal with rounded lobes. *Scales*, absent. *Colours*, yellowish, with twelve vertical brown bands, much narrower than the intermediate ground colour, and decreasing in width below the lateral line; a dark band across the base of the caudal, which fin as well as the dorsal has a single row of indistinct spots forming a sort of greyish band; a dark mark at the base of the anterior dorsal rays.

Hab.—Himalayas.

26. NEMACHEILUS SPILOPTERUS.

Cobitis spilopterus, Cuv. and Val., xviii, p. 27, pl. 522.

Nemachilus spilopterus, Günther, Catal., vii, p. 358.

B. III. D. 2/7, P. 10, V. 7, A. 2/5, C. 19.

Length of head 2/11, of caudal 1/7 of the total length. Height of body scarcely equals the length of the head. *Eyes*, near the summit of the head and in the middle of its length. *Barbels*, short. Free portion of tail about twice as long as high. *Fins*; dorsal with an oblique upper margin, it commences midway between the end of the snout and the root of the caudal. Pectoral reaches half way to the base of the ventral. Caudal very slightly emarginate. *Scales*, absent. *Colours*, greenish yellow, with from eleven to fifteen irregular bands crossing the back, and a black band across the root of the caudal fin. A black blotch at the base of the three first dorsal rays.

Hab.—Himalayas, Assam and Cochin China.

27. NEMACHEILUS SAVONA.

Cobitis savona, Ham. Buch., Fish. Ganges, pp. 357, 394; McClelland, Ind. Cyp., pp. 308, 412, pl. 53, fig. 3, (from H. B.'s MS.); *Cuv. and Val., xviii, p. 32.

Nemacheilus savona, *Günther, Catal., vii, p. 354.

Savon-khorka, Beng.

B. III. D. $\frac{2-3}{8}$, P. 10, V. 7, A. $\frac{2}{5}$, C. 19.

Length of head $\frac{2}{9}$, of caudal $\frac{1}{6}$, height of body $\frac{1}{6}$ of the total length. *Eyes*, rather large in the anterior half of the head, and $1\frac{1}{2}$ diameters from end of snout. *Head*, as broad as it is long without the snout. *Barbels*, long, the four rostral and two maxillary ones reach the eye. *Fins*; dorsal with its upper edge rather convex, it arises midway between the anterior edge of the orbit and the base of the caudal fin, and its commencement is before the origin of the ventrals. Pectoral extends two-thirds of the distance to the ventrals, which last does not reach the anal. Caudal very slightly emarginate, its lobes being rounded. *Lateral line*, incomplete. *Scales*, small, most distinct in the posterior portion of the body. *Colours*, brown, becoming lighter on the abdomen, having from ten to twelve very narrow vertical white bands, not above $\frac{1}{8}$ or $\frac{1}{6}$ as wide as the ground colour, a black band at the root of the caudal fin; a black blotch at the base of the first few dorsal rays, and four or five rows of dark spots on the fin. Caudal with narrow bands of dark spots.

Hab.—Bengal. I received some specimens from the hills near Raniganj.

28. NEMACHEILUS BEAVANI.

Nemacheilus beavani, Günther, Catal. vii, p. 350.

B. III. D. 10, P. 11, V. 7, A. 7, C. 19.

Length of head $\frac{2}{9}$, of caudal $\frac{2}{9}$, height of body $\frac{2}{11}$ of the total length. *Eyes*, small, in the middle of the length of the head. Free portion of the tail rather longer than deep. *Barbels*, six, four rostral and two maxillary. *Fins*; dorsal with an oblique upper edge, it arises midway between the end of the snout and the base of the caudal. Pectoral extends two-thirds of the distance to the root of the ventral. Caudal lobed. *Colours*; body with nine dark cross bands, broader than the lighter interspaces, a black streak across the root of the caudal. Dorsal and caudal rays with blackish dots.

Hab.—Cossy river up to 2 inches long.

29. NEMACHEILUS DENISONII.

? *Cobitis montanus*, Jerdon, M. J. L. and S. 1849, p. 332 (not McClelland).

Nemacheilus Denisonii, Day, Proc. Zool. Soc. 1867, p. 287; Günther, Catal. vii, p. 352.

B. III. D. $\frac{2}{8-9}$, P. 11, V. 7, A. $\frac{2}{5}$, C. 17.

Length of head $\frac{2}{9}$, of caudal $\frac{2}{9}$, height of body $\frac{2}{13}$ of the total length. *Eyes*; diameter $\frac{1}{5}$ of length of head, 2 diameters from end of snout, 1 diameter apart. *Barbels*, short. *Fins*; the dorsal commences midway between the end of snout and base of caudal, which last is lobed. Pectoral extends two-thirds of the distance to the ventrals. *Scales*, minute. *Lateral line*, complete. *Colours*, reddish brown, having from nine to twelve yellowish olive vertical zones, those anterior to the dorsal fin coalescing rather irregularly across the back. Dorsal fin with three rows of fine black spots. Caudal irregularly spotted in bands. Some dull spots on the ventral and anal fins. Most of the head marbled with black dots.

Hab.—Nilgherry and Coorg hills, and rivers at their bases.

A variety of this species with longer barbels exists in Mysore, where it attains four inches in length.

30. NEMACHEILUS TRIANGULARIS.

Day, Proc. Zool. Soc. 1865, p. 295, and Fishes of Malabar, p. 203, pl. 14, fig. 1; Günther, Catal. vii, p. 352.

B. III. D. $\frac{2}{8}$, P. 11, V. 9, A. $\frac{2}{5}$, C. 19.

Length of head $\frac{1}{5}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{4}$ of the total length. *Eyes*; diameter $\frac{1}{4}$ of length of head, 2 diameters from end of snout and one apart. *Barbels*, short. Free portion of tail rather deeper than long. *Fins*; upper margin of dorsal fin oblique, it commences midway between the end of the snout and the base of the caudal, which latter is emarginate. *Scales*, distinct. *Lateral line*, complete. *Colours*, yellowish, with about seven black edged bands on the body disposed in a ∇ shape; likewise, one passes over the opercles, a second through the eye, a third from the orbit to the angle of the mouth. Dorsal with three irregular rows of black spots. Pectoral, ventral, and anal unspotted, but stained at their margins. Three oblique bars across each lobe of the caudal which has a black mark at its base.

Hab.—Travancore hills.

31.* NEMACHEILUS MARMORATUS.

Cobitis marmorata, Heckel, Fisch. Kaschmir, p. 76, t. 12, figs. 1—2, and Hügel, Kaschmir, iv, p. 380; *Cuv. and Val. xviii, p. 41.

Cobitis vittata, Heckel, l. c. p. 80, figs. 3, 4; and Hügel, Kaschmir, iv, p. 382; *Cuv. and Val., xviii, p. 42.

Nemachilus marmoratus, *Günther, Catal. vii, p. 356.

B. III. D. 10, V. 7, A. 7.

Length of head $\frac{2}{9}$, height of body less than $\frac{2}{9}$ of the length without the caudal fin. *Eyes*, small, situated in the middle of the length of the head. Free portion of tail not elongated. *Fins*; upper margin of dorsal fin oblique, its commencement being nearly midway between the end of the

snout and the root of the caudal, which latter is somewhat convex at its extremity. Pectoral reaches rather above half way to the root of the ventral. *Scales*, absent. *Colours*; mottled with brown. In some specimens a dark band exists along the body and some bars over the back of the tail. (*N. vittata*.)

Hab.—Kashmir.

32. NEMACHEILUS GRIFFITHII.

Günther, Catal., vii, p. 360.

B. III. D. 10, P. 11, V. 8, A. 7, C. 15.

Length of head $1/6$, of caudal $1/6$, height of body $1/8$ of the total length. *Eyes*; diameter $1/7$ of length of head, 3 diameters from end of snout, which is produced. Free portion of tail low, its depth being $1/3$ of its length or even less. *Fins*; upper margin of dorsal oblique, with its anterior superior angle rounded, it commences midway between the end of the snout and the root of the caudal, which latter is emarginate. Pectoral reaches rather above half way to the root of the ventral. *Scales*, present. *Lateral line*, complete. *Colours*; sides of the body, dorsal and caudal fins irregularly marbled with brownish black, several similar bands cross the back.

Hab.—Probably Assam, attaining $5\frac{1}{2}$ inches in length.

33. NEMACHEILUS CORICA.

Cobitis corica, Ham. Buch., Fish. Ganges, pp. 359, 395; *Cuv. and Val., xviii, p. 36. *Sclastara punctata*, McClell., Ind. Cyp. pp. 308, 442, pl. 53, fig. 4, (from H. B.'s MS). *Nemachilus corica*, *Günther, Catal., vii, p. 361.

Khorika, Beng.

B. III. D. 2/8, P. 13, V. 8, A. 2/5, C. 17.

Length of head $2/11$, of caudal $1/5$, height of body $1/6$ of the total length. *Eyes*, of moderate size, in the middle of the length of the head. *Barbels*, well developed, the external rostral pair longer than the orbit. *Fins*; dorsal commences anterior to the ventral and nearer the snout than the base of the caudal, which last is lobed in its posterior half, the lower being the longer. Upper margin of dorsal fin oblique. Third and fourth pectoral rays produced, reaching the base of the ventral fin. *Scales*, visible in the posterior half of the body. *Colours*, bluish, with about thirteen black blotches along the middle of the side, and smaller ones above and descending to between them.

Hab.—N. E. Bengal, Panjab and Assam.

34. NEMACHEILUS GUENTHERI.

Day, Proc. Zool. Soc. 1867, p. 285; Günther, Catal. vii, p. 361.

B. III. D. 2/8, P. 11, V. 7, A. 2/5, C. 19.

Length of head $2/11$, of caudal $2/13$, height of body $1/7$ of the total length. *Eyes*; diameter $2/7$ of length of head, $1\frac{1}{2}$ diameters from end of snout, 1 diameter apart. Head rather compressed. Free portion of tail longer than deep. *Fins*; upper margin of dorsal oblique, the fin commences midway between the end of the snout and the base of the caudal, which last is lobed. Pectoral extends three-fifths of the distance to the base of the ventral. *Scales*, distinct. *Lateral line*, incomplete. *Colours*, pinkish, coarsely reticulated with olive brown markings, leaving three rows of large spots along the side; a black band at the base of the caudal fin, which has two indistinct dark bands across either lobe, the extremities of which are stained. Two rows of fine black dots along the dorsal fin, and one across the anal.

Hab.—Rivers along the lower slopes, and base of the Nilgherry hills.

35. NEMACHEILUS BLYTHII.

Day, Proc. Zool. Soc., 1869, p. 552.

B. III. D. $2/7$, V. 9, A. $2/5$, C. 19.

Length of head $1/5$, of pectoral $1/5$, of caudal $1/5$, height of body $2/13$ of the total length. *Eyes*; diameter $2/9$ of length of head, 1 diameter from end of snout, $1\frac{1}{4}$ apart. *Barbels*, longer than one diameter of the orbit. *Fins*; dorsal commences midway between the snout and the base of the caudal fin, which latter has sharp lobes. *Scales*, minute. *Colours*, brownish, becoming lighter on the abdomen; a dark band at the base of the caudal.

Hab.—Doubtful. Two specimens 3 inches long exist in the Calcutta Museum.

36. NEMACHEILUS BUTANENSIS.

Cobitis Butanensis, McClell., C. J. N. H. ii, p. 586.

Nemacheilus butanensis, Günther, Catal., vii, p. 358.

B. III. D. 9, V. 7, A. 7.

Length of head $2/11$, of caudal $2/11$, height of body $1/11$ of the total length. *Eyes* small, in the middle of the length of the head. Free portion of tail elongated and compressed, its depth being nearly half of its length. Lips fringed. *Fins*, upper margin of dorsal convex, it commences nearer to the end of the snout than to the root of the caudal, which latter is rounded. The pectoral does not extend half way to the base of the ventral. *Scales*, distinct. *Colours*, doubtful.

Hab.—Bútan, where it attains five inches in length.

37. NEMACHEILUS RUBRIPINNIS.

Cobitis rubripinnis, Jerdon, M. J. L. and S. 1849, p. 332.

Nemacheilus rubripinnis, Day, Fishes of Malabar, p. 203.

B. III. D. $2/6$, A. $2/5$, C. 13.

Length of head $1/6$, of pectoral $1/8$, of caudal $1/6$, height of body

$1/5$ of the total length. *Eyes*; diameter $1/6$ of length of head, 2 diameters from end of snout and apart. *Fins*; dorsal commences midway between end of snout and base of caudal fin, which is slightly emarginated. *Scales*, minute. *Lateral line*, complete. *Colours*, dirty olive along the back becoming light on the abdomen. Nine bars pass from the back towards the lateral line, and also a number of irregular bands descend to the same distance; a dark bar at the base of the caudal. Dorsal with two bars, the lowest sometimes red. Caudal with three wide bars.

Hab.—Malabar.

38.* NEMACHEILUS TURIO.

Cobitis turio, Ham. Buch., Fish. Ganges, pp. 358, 395; *Cuv. and Val., xviii, p. 33.

„ *gibbosa*, McClell., Ind. Cyp., pp. 304, 436. pl. 52, fig. 7, (from H. B.'s MS.).

„ *arenata*, Val. in Jacq. Voy. Ind. Poiss., pl. 15, fig. 1; Cuv. and Val., xviii, p. 28.

Nemacheilus turio, *Günther, Catal., vii, p. 360.

Turi, Assam.

B. III. D. 8 (10?), P. 12, V. 8, A. 7, C. 19.

Length of head (according to figure) about $1/5$, of caudal $1/5$, height of body $1/5$ of the total length. *Eyes*, of moderate size. Free portion of tail appears higher than long. Back elevated. *Fins*; pectoral nearly reaches the ventral. Caudal emarginate. *Colours*; body irregularly spotted and blotched.

Hab.—Assam.

39.* NEMACHEILUS GUTTATUS.

Cobitis guttata, McClell., Ind. Cyp., pp. 305, 438, pl. 52, fig. 5, 6; *Cuv. and Val. xviii, p. 79.

**Nemacheilus guttatus*, Günther, Catal., vii, p. 360.

B. III. D. 8.

This species is said to have only four barbels. *Colours*, light green with dark blotches.

Hab.—Joorhath in Upper Assam.

Genus. 10. OREONECTES, Günther.

Head depressed, body scarcely compressed. No suborbital spine. Six barbels round the upper jaw. Dorsal fin placed far backwards at some distance behind the root of the ventrals; caudal rounded.

Hab.—China.

Genus. 11. MISGURNUS, Lacép.

COBITICHTHYS, Bleeker.

Body elongated and compressed. No suborbital spine. Ten or twelve barbels, four being on the mandible. Dorsal fin arising opposite the ventrals. Caudal rounded.

Geographical distribution.—This genus which exists in Central and Eastern Europe has also its representatives in India and China.

SYNOPSIS OF SPECIES.

1. *Misgurnus lateralis*, D. 10, A. 8. Barbels ten; body longitudinally banded, ocellus on base of caudal. *Bengal.*
2. " *anguillicaudatus*, D. 2/7, A. 8. Barbels ten; body irregularly dotted, a black spot on base of caudal. *China. Japan.*

1. MISGURNUS LATERALIS.

Günther, *Catal.*, vii, p. 346.

B. III. D. 10, V. 7, A. 8.

Length of head 1/6, of caudal 1/6, height of body rather less than 1/6 of the length. *Eyes*; diameter 2/9 of length of head, nearly 2 diameters from end of snout. Head and body compressed. *Barbels* ten, the inner mandibular pair very short. Free portion of tail rather longer than deep. *Fins*; dorsal arises midway between end of snout and the root of the caudal, and slightly in advance of the root of the ventral. Pectoral rather longer than the head. Caudal rounded. *Scales*, very distinct. *Colours*; a broad brown band, runs along the middle of the side, and is separated from the brown back by a yellowish band; a narrow and indistinct brown band on the abdomen; a black ocellus edged with white on the base of the upper half of the caudal fin. Dorsal and caudal finely mottled with brown.

Hab.—Bengal from whence one specimen 3½ inches long was received.

2. MISGURNUS ANGUILLICAUDATUS.

Cobitis anguillicaudata, Cantor, *Ann. Mag. Nat. Hist.*, 1842, p. 485; Richard, *Voy. Sulph. Fish.*, p. 143, pl. 55, fig. 9, 10.

Cobitis bifurcata, McClell, *C. J. N. Hist.*, 1844, p. 400, pl. 23, fig. 1.

? " *pectoralis*, McClell, l. o., fig. 3, (Pect. fins elongated).

" *micropus*, Cuv. and Val., xviii, p. 29.

" *psammismus*, Richard, *Ioh. China*, p. 300.

" *rubripinnis et maculata*, Temm and Schleg, *Fauna Japon*, pp. 220, 221, t. 103, fig. 1, 2.

" *decemcirrhosus*, Basilewsky, *Mém. Soc. Nat. Mosc.* 1855, p. 239.

? *Cobitichthys enalios*, Bleeker, *Act. Soc. Sc. Indo. Neerl.*, viii, *Japan*, vi, p. 88, t. 2, fig. 4, (Pectoral fins elongated.)

Misgurnus anguillicaudatus, Günther, *Catal.*, vii, p. 345.

B. III. D. 2/7, P. 9, V. 7, C. 13, L. r. 140, L. tr. 30.

Barbels ten, four being mandibular. *Fins*; origin of dorsal midway between occiput and base of caudal. Pectoral shorter or as long as the head. *Scales*, distinct. *Colours*; body and fins irregularly dotted with brownish black, and generally a small black spot at the upper portion of the root of the caudal fin.

Hab.—China, Japan, Formosa.

(To be continued.)

MONOGRAPH OF HIMALAYAN, ASSAMESE, BARMESE AND CINGALESE CLAUSILIE,—by WILLIAM T. BLANFORD, F. G. S., C. M. Z. S., &c.

(With Plate IX.)

[Received 19th January, read 2nd February, 1872.]

Not a single species of *Clausilia* has hitherto been found in India proper, South of the Himalayas, not even in the semi-Malay fauna of the Malabar coast, although one kind occurs in Ceylon.* The few forms hitherto described from the territories belonging to the British Indian Empire are from the mountains to the north, or from the countries to the eastward. Several of those described are rare and local, and some are from places very difficult of access.

By the kindness of my friends, Major Godwin-Austen, Mr. Theobald, Dr. Stoliczka, and Mr. G. Nevill, I have been furnished with specimens of all the species not in my own collection, hitherto described from British Barma, Assam, the Himalayas and Ceylon, except *Clausilia vespa*, Gould, *C. insignis*, Gould, and *C. bulbosus*, Benson. I have copied authentic figures of the last two, and I add a representation of a shell from Moulmein which may possibly be a variety of *C. vespa*.

I am unable, without access to a greater number of types, to assign all the Himalayan and Burmese *Clausilie* to the proper sub-genera. Those to which the known species hitherto been referred do not always appear to me to include them. Thus *C. insignis*, Gould, *C. Philippiana*, Pfr., and *C. cylindrica*, Gray, have all been classed in *Phædusa*, to which I am inclined to doubt if any except the first really belong. I have classed the species in natural sections, and I have given the most conspicuous characters of each group; and in one case only I have proposed a new sectional or sub-generic name.

SECTION I.—Shell horny, smooth, elongate; the apical portion deciduous; lunule rudimentary or wanting, palatal plicæ few, the uppermost elongate.

1.† CLAUSILIA CYLINDRICA, Gray.

Pfeiffer, Symbol. III, p. 93. Mon. Hell. II, p. 428;—III, p. 590;—IV, p. 725;—VI, p. 412. Kuster, Mart. and Chemn., Pl. XI, f. 12—16. Hanley and Theobald, Conchologia Indica, Pl. XXIV, f. 4.‡

* But a single species *C. Javanensis*, Pfr., has hitherto been obtained in the Ethiopian region. The genus is found throughout the temperate portion of the palaearctic region, in the Malay (or Indo-Malay) province, and in part of the neotropical region.

† The figures in Pl. IX correspond in their numbers with the species, thus: 1, *C. cylindrica*, is fig. 1. 2, *C. Ios*, fig. 2, &c.

‡ The full synonymy being given in Pfeiffer's Monograph, I do not repeat it, but only add references to figures.

Hab.—Western Himalayas from the western frontier of Nipál to the Satlej valley, at elevations from 5000 to 9000 feet.

The figure in the *Conchologia Indica* is that of a specimen which, although adult, has retained its apex. This is a very rare occurrence. The figure now given represents the shell as it is usually found.

Three palatal plaits, the upper elongate, are always present, and beneath them there is occasionally to be found a rudimentary lunella. The characters both of the shell and of the internal plication differ widely from those of typical *Phaedusa*, in which sub-genus I do not think that the present species can be included. It stands by itself, and I am inclined to look upon it as the type of a peculiar section.

SECTION II.—? *Medora* H. and A. Adams. Shell fusiform, horny, costulate or smooth, apex not deciduous. Lunule developed, with few, usually two, palatal plicæ above it, the upper elongate.

2. CLAUSILIA IÖS, Benson.

Ann. and Mag. Nat. Hist. 1852, Ser. 2, Vol. X, p. 350. Pfeif. Mon. Hel. III, p. 612; —IV, p. 761; —VI, p. 495. Hanley and Theobald, *Conch. Ind.*, Pl. XXIV, fig. 10.

Hab.—Temperate regions of Sikkim and Bütán, in the Eastern Himalayas, from about 5000 to 9000 feet. It doubtless also exists in Nipál. It is generally met with at the roots of oaks and other large trees.

In this species, as was noticed by Mr. Benson, the lunule is sometimes broken up into short oblique plaits above, and consequently the number of palatal plicæ varies. Sometimes there is only the long lamellar plait above the lunule, in other specimens there are, besides the long one, two short plicæ.

3. CLAUSILIA BACILLUM, Benson.

Hanley and Theobald, *Conch. Ind.* Pl. XXIV, fig. 1, nec Theobald, J. A. S. B., 1858, p. 321.

? *C. ignota*, Theob. J. A. S. B., 1858, Vol. XXVII, p. 321, (descriptio nulla).

Testa subrimata, fusiformis, solidula, glabra, vix striatula, nitidula, superficie sæpe in exemplis veteribus erosa, albido- vel cerco- cornea; spira superne regulariter attenuata; apice obtuso, papillari; sutura simplice impressa. Anfr. 9 convexi, ultimus validius striatus, pone aperturam vix compressus; apertura verticalis, piriformi-oblonga, lamella supera validiori, columellari antice vix conspicua, parum torta, intus subfurcata; lunella distincta, plicis palatalibus 2, suture parallelibus, supera elongata, altera brevi, a lunella vix disjuncta. Peristoma continuum, solutum, album, breviter expansum et incrassatum, margine parietali vix sinuato. Long. 15, anfr. penult. diam. 3·5 m.m.; apert. cum peristomate 3·33 longa, 2·33 m.m. lata.

Hab. in montibus Khasi et Naga dictis, ultra fines meridionales vallis Assamensis. W. Theobald ad Nanchui in montibus Khasi invenit, H. Godwin-Austen haud procul ab Asalu in Cachar septentrionali.

This species is near *C. Ios*, but easily distinguished by the absence of costulate sculpture. I think there can be but little doubt of the identity of the form found by Major Godwin-Austen, from which my figures and description are taken, with the *C. bacillum* of the *Conchologia Indica*, but as only one single figure is given in that work, and there is no description, I may be mistaken. I doubt, however, that this is the *C. bacillum* of Mr. Theobald's paper in the Journal for 1858, i. e., because that was said to be of the type of *C. insignis*, which can scarcely said to be the case with the present species, but as no descriptions were furnished in Mr. Theobald's paper, his names cannot be retained. The name, in the present instance, must be considered as founded on the figure in the *Conchologia Indica*.

4. CLAUSILIA CEYLANICA, Bens.

Ann. and Mag. Nat. Hist., February, 1863, Ser. 3, Vol. XI, p. 89.

Pfeiffer, Mon. Hel. VI, p. 427.

Hab.—The mountains in the southern part of Ceylon.

This shell was first found by Mr. Layard, and has since been obtained by Mr. H. Nevill. I am indebted to Messrs. G. Nevill and Stoliezka for the loan of specimens.

Benson, in his original description, has overlooked the lunule, which is well developed, as in the two preceding species.

5. CLAUSILIA THEOBALDI, sp. nov.

Testa rimata, fusiformi turrita, cornea, confertim flexuose costulata, translucens. Spira turrita, sensim attenuata, lateribus superne subrectis, apice acutiusculo, sutura impressa. Anfr. 11 convexi, antepenultimus et penultimus majores, ultimus juxta suturam tumidiusculus, infra plicam palatalem superam compressus, subtilis rotundatus. Apertura cix obliqua, piriformis, lamellis approximatis, medioeribus, supera acuta, infera immersa, lunella distincta, plicis palatalibus 2, supera elongata, altera brevi. Peristoma rectum, expansum, solutum, margine palatali haud sinuato. Long. 22 mm., diam. 8·5; apert. 3·5 mm., longa, 2·6 lata.

Hab.—Tonglu in provincia Barmann. *Detecit* W. Theobald.

This is the only species of the present group hitherto found in Barma.

SECTION III.—*Phædusa*, H. and A. Adams. Shell fusiform, generally rather thick; apex not deciduous. No lunule, palatal plicæ numerous, the uppermost produced nearly to the aperture.

A. Sutures crenulated.

6. CLAUSILIA LOXOSTOMA, Bens.

J. A. S. B., 1836, Vol. V, p. 353. Pfeiffer, Mon. Hel. II, p. 404;—III, p. 590;—IV, p. 725;—VI, p. 411. Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 7.

C. Bengalicensis, Von dem Busch, Pfeiffer, Synb. II, p. 60.—Küster, Mart. and Chem. p. 24, pl. 2, fig. 11-13.

Hab.—Khasi hills, North-east of Bengal, and South of the Assam valley.

The locality usually assigned to this shell, Bengal, conveys a false impression, as neither this nor any other *Clausilia* is found in the plains of India. Teria ghat, the locality mentioned in the *Conchologia Indica*, is at the southern base of the Khasi hills, and the shell is found at many places along the range, from the base up to a height of, I believe, 4000 or 5000 feet. Major Godwin-Austen sent me this species from Habiang on the Khasi plateau. I do not know if *C. loxostoma* occurs also on the northern or Assam flank of the range; I have never seen specimens from any place in that direction, and as the climate is much drier, many of the shells common on the southern watershed are wanting to the north.

The form of this species varies considerably, some specimens being much more fusiform than others. I have figured three varieties, of which figure 6 may be considered as the typical form.

7. *CLAUSILIA FERRUGINEA*, sp. nov.

Testa subrimata, elongato-fusiformis, solida, fere glabra, striatula, haud nitida, sordide et interdum pallide ferruginea; spira alta, lateribus sursum subrectis, apice obtuso papillari, sutura impressa, valde crenulata. Anfr. 11 convexi, ultimus capilluceo-striatus, basi rotundatus. Apertura fere verticalis, subtrapezoidalis, marginibus lateralibus fere parallelis, basali rotundato; lamella supera acuta, sinistrorsim inflexa, columellari medioeri, plicis palatalibus circa 5, supera elongata, haud procul ab apertura desinente, suturæ parallela, cæteris magis obliquis curvatisque. Peristoma continuum, album, expansum, parum incrassatum, margine superno repando, leviter sinuato. Long. 30, diam. 5.5 mm.; apert. cum perist. 6.5 longa, 4.66 lata.

Hab.—In montibus Naga dictis, ultra fines meridionales provinciæ Assam, (ditexit Masters).

7a. *Var. tumida, anfractibus ultimis aperturaque majoribus. Long. circa 33, diam. 6.5 mm., apert. 7 longa, 5 lata.*

Hab.—In "North Cachar," (Godwin-Austen).

This fine species, the largest hitherto found in Assam or the Himalayas, resembles *C. loxostoma* in its strongly crenulated sutures and in form, but differs in its larger size and more numerous whorls. It was first found by Mr. Masters in 1860, in the hills south of Golaghât, together with *Spiraculum Mastersi* and other interesting shells. The more tumid variety has lately been obtained in North Cachar by Major Godwin-Austen.

8. *CLAUSILIA ASALUENSIS*, Godwin-Austen, MS.

Testa non rimata, fusiformi-turrita, alba vel pallide castanea, solidula, striata, ad anfractus duos ultimos capilluceo-striata. Spira sensim attenuata lateribus superne concaviusculis, apice obtusiusculo, sutura impressa, confertim

minuteque crenulata. Anfr. 12-13, convexi, antepenultimus maximus, penultimus parum minor, ultimus ad latus compressus, ad basin rotundatus. Apertura subverticalis, piriformis, lamella supera compressa, columellari immersa, lunella nulla, plica palatali supera elongata, suturæ parallela, secunda etiam parallela, mediocri, cæteris obliquis. Peristoma leviter sinuatum, album, incrassatum, continuum, breviter solutum. Long. 23·5, diam. 5 mm.; apert. c. perist. 5 longa, 3·66 lata.

Hab. ad Asalu in North Cachar, ad altitudinem 7000 ped. angl. (Godwin-Austen.)

This species is easily distinguished from both *C. loxostoma* and *C. ferruginea* by its more numerous whorls and finely crenulate sutures. In size it is intermediate between the two, some specimens being as much as 26 mm., or rather more than an inch in length.

B. *Sutures simple.*

9. *CLAUSILIA FUSIFORMIS*, W. Blanf.

J. A. S. B., 1865, Vol. XXXIV, Pt. 2, p. 80. Pfeiffer, Mon. Hel. Vol. VI, p. 410. Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 6.

Hab.—Arakan hills, Barma.

This shell was described from a single immature specimen. Mr. Theobald has since found several adult shells from one of which the figure now given is taken. These differ a little from the type, they are smaller, and the lower whorls are rather more convex. The peristome is thickened, expanded and continuous. The following are the characters of the form now figured.

Testa non rimata, fusiformis, albo-cornea, minute oblique præsertim ad anfractum ultimum costulato striata; spira supra anfr. antepenultimum lente decrescente, versus apicem acutiusculum rapide attenuata; sutura simplice parum impressa, versus apicem profundiore. Anfr. 8-9, superi convexi, cæteri concaviusculi, antepenultimus tumidus, penultimus minor, ultimus ad basin rotundatus. Apertura rotundato-piriformis, parum obliqua, lamella supera mediocri, infera paulum immersa torta; lunella nulla, plica palatali supera longissima, cæteris brevioribus subparallelis, vic obliquis. Peristoma album, incrassatum, expansum, continuum, non solutum, leviter sinuatum. Long. 22·5, diam. 6 mm. Apert. c. perist. 6 mm. longa, 5 lata.

This species closely resembles the next, but appears to be distinguished by having 1 to 2 whorls less, by the apex being less attenuate, and the lower palatal plaits much less oblique. It is quite possible, however, that connecting links may be found, in which case I should be inclined to unite the two.

10. *CLAUSILIA GOULDIANA*, Pfr.

Malakoz. Blätter, 1856, Vol. III, p. 259.—Mon. Hel. IV, p. 724,—VI, p. 409.—Nov. Conch. I, p. 123, Pl. XXXIV, fig. 18—20.

Hab.—Mergui and Moulmain, Tenasserim provinces, British Barma.

This species was first described by Pfeiffer from Mergui specimens in Mr. Hugh Cuming's collection. It has since been found abundantly by Mr. Theobald near Moulmain. It varies much in colour, some specimens being brown, others rosy pink, others nearly white; the peristome is either pink or white. Some shells from Moulmain are only 22 millimetres long, others are nearly 26.

11. *CLAUSILIA INSIGNIS*, Gould.

Proc. Bost. Soc. Nat. Hist. Vol. I, p. 140.—Bost. Jour. Nat. Hist. Vol. IV, p. 458, pl. XXIV, fig. 8. Pfeiffer, Mon. Hel. II, p. 423.

Hab.—Tavoy, Tenasserim provinces, Barma.

The figure given is copied from Gould's. I have never seen this species.

12. *CLAUSILIA* SP.

C. insignis, Pfr. (nec Gould), Mon. Hel. III, p. 589—IV, p. 725.—VI, p. 409.—Nov. Conch. I, p. 122, Pl. XXXIV, fig. 15—17.

C. insignis, Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 2.

Hab.—Tenasserim provinces. *Var. gracilior*, Conch. Ind. Pl. XXIV, fig. 3, is from Moulmain.

The figure now given is copied from that in the *Conchologia Indica*, but reduced to the natural size.

It appears to me evident, either that Gould's figure of *C. insignis* in the Boston Journal is incorrect, or that a different shell has been figured under the same name by Pfeiffer and Hanley. The first is improbable, because the other shells represented on the same plate are excellently figured, and I can only conclude that two forms have been confounded under this name. The *C. insignis* of Pfeiffer and Hanley requires naming, but as I have no specimens, and the system of giving names to figures is highly objectionable, I shall not attempt to supply the deficiency.

The *C. insignis*, *var. gracilior* of the *Conchologia Indica* is probably a variety of the present form. From the references given in the *Conchologia* I am inclined to believe that Mr. Hanley has already noticed the differences between Gould's and Pfeiffer's shells described as *C. insignis*, and that he believes the former to be represented by fig. 2, the latter (his *var. gracilior*) by fig. 3, of Pl. XXIV, of the *Conchologia*. It appears to me, however, that Pfeiffer's figure in the *Noctitates Conchologicae* agrees far better with fig. 2, than with fig. 3, and that Gould's original figure in the Boston Journal represents a shell quite distinct from both.

13. *CLAUSILIA MONTICOLA*, Godwin-Austen. MS.

Testa rimata, exilis, elongata, fusiformi-subulata, solidula, brunnea vel brunnescente-grisea, striata, parum nitida; superficie saepe erosa; spiræ lateribus antice rectis, apicem papillarem versus concaviusculis; sutura simplice, impressa. Anfr. 13 convexi, primi 4 fere cylindrici, antepenultimus

vix quam penultimus major, ultimus ad basin rotundatus, haud compressus. Apertura piriformis, fere verticalis, lamella palatali sinistrorsim deflexa, acuta; columellari subprofunda; lamella nulla, plicis palatalibus fere parallelis 6-7, supera calde elongata. Peristoma continuum, vix solutum, leviter sinuatum, superne repandum, expansiusculum, mediocriter incrassatum, album, margine parietali leviter sinuato. Long. 21, diam. anfr. penult. 4 mm.; apert. cum perist. 3.66 longa, 2.66 lata.

Hab.—In montibus Barrail dictis, ad latus meridionale vallis Assamensis, in "North Cachar," ad alt. circa 6500 ped. angl. detecti H. H. Godwin-Austen.

This species is well distinguished from its allies by its slender shape and numerous whorls.

I have a single specimen of a *Clausilia* from the Arakan hills, somewhat similar to *C. monticola*, but with only ten whorls. As it is bleached and the surface in bad condition, I do not describe it.

SECTION IV.—*Oospira*,* *sect. nov.* Shell with but few whorls, usually five or six, and of a peculiar more or less oval form with a very blunt apex. Lunule wanting, palatal plaits as in *Phedusa*. Type *C. Philippiana*, Pfr.

The known shells of this section are solid deeply coloured *Clausiliæ*, smooth or with very slight sculpture. So far as is hitherto known, the type is peculiar to Martaban and Tenasserim.

14. *CLAUSILIA PHILIPPIANA*, Pfr.

Zeitschr. f. Malak. 1847, p. 69.—Mon. Hel. II, p. 423;—III, p. 590;—IV, p. 725;—VI, p. 401, Küster, Mart. and Chem. p. 100, Pl. XI, fig. 7—9. Stoliczka, J. A. S. B.; 1871, Vol. XL, Pt. II, p. 174, Pl. VI, fig. 7—10 (lingual teeth, jaw and anatomy).

Hab.—Moulmain. According to Pfeiffer this shell is also found at Mergui, but I have never seen specimens from the latter locality.

15. *CLAUSILIA VESPA*, Gould.

Proc. Boston Soc. 1859, Vol. VI, p. 12.—Otia Conchologica, p. 220. Pfeiffer, Mon. Hel. VI, p. 409.

Hab.—Tavoy (and Moulmain?).

I have figured a shell from Moulmain which may possibly be this form, as it agrees in its measurements with Gould's type; but it is barely separable from *C. Philippiana*. Gould's description is so meagre that, it is very difficult to identify the species, and it has never, so far as I am aware, been figured.

The shell here represented has a most astonishing resemblance to *Clausilia Bartletti*, H. Adams, Proc. Zool. Soc. 1866, p. 441, Pl. XXXVIII, fig. 2, from Peru. We shall presently see that this is not the only instance of resemblance between Barmese and South American *Clausiliæ*.

* Etym. *ovon* an egg and *σπειρα* a spiral.

16. *CLAUSILIA BULBUS*, Bens.

Ann. and Mag. Nat. Hist. 1863, Ser. 3, Vol. XI, p. 321. Pfeiffer, Mon. Hel. VI, p. 409. Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 5.

Hab.—Banks of the river Attaran, near Moulmain. I have never seen this species. The figure in the *Conchologia Indica* is, I believe, taken from Mr. Benson's original specimen; I have therefore given a copy reduced to the natural size.

17. *CLAUSILIA OVATA*, sp. nov.

Testa vix subrimata, elongato-orata, pupiformis, intense rufo-ferruginea, regulariter confertissime striata; spira tumida, apice convexo, sutura parum impressa. Anfr. 5·5 convexiusculi, primi rapide accrescentes, antepenultimus maximus, penultimus vix minor, ultimus ad basin rotundatus. Apertura auriformis, fere verticalis, juxta anfractum penultimum repanda, lamella supera acuta, antice validiore, fere verticali, infra stricta; lunella nulla, plicis palatalibus 7, supera producta, in fuce aperturae conspicua, suturæ parallela, secunda curvata, cæteris brevibus obliquis. Long. 19, diam. 7 mm. Apert. oblique 6 longa, 4·5 lata.

Hab. Ad Nattoung, juxta ripam Attaran fluminis, haud procul a Moulmain in Barma.

This is a fourth species of this little group. It is more ovate than *C. Philippiana* and *C. vespa*, smaller and less tumid than *C. bulbosus*.

SECTION V.—? *Nenia* H. and A. Adams. Shell elongate, mouth entirely free from the last whorl, and broadly expanded, both the lamellæ of the aperture on the parietal margin and close together, subcolumellar lamina large and not concealed by the columellar, a large lunule and one or two parietal plaits above it.

This group includes one species from British Barma, and one (*C. tuba** Hanley) from the Shan States of Upper Barma, outside of the British territories. It appears to differ from the South American forms which compose the subgenus *Nenia* in the possession of a lunule, but I have no sufficient means of comparison, and in other respects some of the Neotropical forms closely resemble those of Barma.

18. *CLAUSILIA MASONI*, Theob.

J. A. S. B., 1864, Vol. XXXIII, p. 246, Hanley and Theobald, Conch. Ind. Pl. XXIV, fig. 8.

Hab.—Near Tonghú in the mountains between Pegu and Martaban.

The lamellæ of the aperture are as above described. Those of *C. tuba* are precisely similar.

* Ann. and Mag. Nat. Hist. May, 1868, Ser. 4, vol. I, p. 343. By mistake, in the *Conchologia Indica*, the Proceedings of the Zoological Society are quoted as the work in which this species was described.

POSTSCRIPT TO THE MONOGRAPH OF HIMALAYAN AND BARMESE
CLAUSILÆ,—by DR. F. STOLICZKA.

(Received 31st July, 1872.)

(See plate IX.)

In looking through the proof-sheets of Mr. Blanford's paper, while they passed through the press, and comparing his descriptions with the specimens of Indian and Barmese *Clausilæ* in my collection, I find that a few additions can be made to the Monograph. The new species are figured on the same plate, IX. I would have gladly handed over the additional materials to Mr. Blanford, but as he is now engaged on an expedition in Persia, and may not for some time return to Calcutta, I do not think it advisable to defer on that account the publication of these notes.

I have only to observe that I had an opportunity of comparing some of Mr. Theobald's original specimens, and have thus been enabled to add some information regarding the synonymy of one or two doubtful species.

1. *CL. CYLINDRICA*. (Ad p. 199.)

I have specimens of this species from near Tézpúr (Asám), and Dr. Waagen very recently brought one from near Marri; the geographical distribution of the species may, therefore, be said to extend over the whole of the southern slopes of the Himalayas, though its head-quarter appears to be about Nyi-tál, or near the centre of the range.

3. *CL. BACILLUM*. (Ad p. 200.)

This species varies considerably both in the form and length of the shell. The specimen figured may be taken as the type, but others longer and slenderer are quite as common, they very closely resemble *Theobaldi* in form, differing from it by their smooth shining surface. One of the most slender specimens measures: total length 15, thickness 3 mm.; it has $10\frac{1}{2}$ whorls and is much attenuated towards the apex.

The representation in the 'Conch. Indica' must evidently be taken as that of true *bacillum*, of which, the authors of that work say, two specimens were known at that time: one in Benson's and the other in Theobald's collection. These are the two specimens to which Theobald (Journ. A. S. B., 1858, p. 321) refers under the name of *ignota*, as a provisional name, while the single specimen which he quotes l. c. as '*C. Bacillan*, B.' is a somewhat worn *Cl. Asaluensis*, and hence Theobald's reference that the species is of the type of *C. insignis*. I have carefully examined with Mr. Theobald his type specimens, and the question as regard the synonymy may be considered as settled; the species must stand as recorded by Blanford.

6. CL. LOXOSTOMA. (Ad p. 202.)

The typical specimens of this species are pale brownish or dull ferruginous, and nearly smooth or obsoletely striated. Together with these a white, solid variety occurs on the Khasi hills; in form it tolerably agrees with Blanford's fig. 6*b* (plate IX), some specimens are, however, still a little thicker, and the transverse costulation on all the whorls is very distinct, while the crenulation along the suture is generally not so coarse, as in typical *loxostoma*, though evidently stronger than in *Asaluensis*, which latter also differs by a more slender shape and smaller aperture. Although the above noticed form appears to be a well marked variety of *loxostoma*, the differences do not seem to be constant, and both shells unquestionably are of the same type. The crenulation on the two last whorls is often most regular, each alternate rib somewhat projecting into the sutural impression. In other specimens two ribs unite to a sutural tooth. The stronger or finer costulation, or striation, of the whorls appears to depend upon the character of the locality in which the specimens live.

I have added a figure (6*d*) of one of the shortest costulated varieties from the Khasi hills.

10. CL. GOULDIANA. (Ad p. 203.)

This also is one of the most variable species, both in colour and form. Young specimens are either brown or of a beautiful rosy tinge; older shells, after they become solidified, either retain the brown or pink colour, or the lip becomes yellowish brown or perfectly white; the 3-5 top-whorls are always white. The form differs from fusiform to highly turreted, as may be indicated by the following measurements—

a.	long. 23,	lat. 6,	long. apert. 5.2,	ej. lat. 4.2	mm.
b.	" 28,	" 6.3,	" " 6.2,	" " 5.	" "
c.	" 32,	" 6.5,	" " 6.	" " 5.	" "

All three specimens are from near Moulmain; *a* is almost exactly identical with Pfeiffer's original figure of the species; *b* and *c* are a white and a yellowish liped variety from Mr. Theobald's collection; *c* has an almost abnormally small aperture as compared with the length of the shell.

11 AND 12. CL. INSIGNIS. (See also fig. 12*a*; ad p. 204.)

Mr. Blanford is of opinion that Pfeiffer's *insignis* is not the same as Gould's, but that it is identical with the form figured by Hanley and Theobald in the Conch. Iconica.

There is undoubtedly a slight discrepancy between Gould's original figure and description. He states the number of whorls to be 8 or 9, and the apex 'manillated,' while the figure shews it shortly pointed; then again he gives 'length 1 inch, breadth $\frac{1}{5}$ of an inch.' The original figure (whether enlarged or not, it is not stated) represents a shell of 28 mm. in length and 7 in thickness; the second dimension is, therefore, only one fourth of the total

length, instead of one fifth; if the latter were the case, the shell would be an extremely slender one, and comparing it with *Gouldiana*, as a shell of the same type, I would prefer to consider Gould's figure as more probably correct, than his measurement. Now, allowing for these discrepancies in Gould's original statements, I am inclined to think that Pfeiffer's species is very closely allied to, if not exactly identical with, true *insignis*, but Hanley and Theobald's figures certainly seem to be somewhat different from both the preceding; however, they do not exclude the possibility of representing mere variations of one and the same species. Whether the form of the aperture in Gould's original figure is slightly exaggerated or not, I think the great expansion of the outer lip is decidedly somewhat abnormal, and setting aside this point the remaining differences between the shells figured as *insignis* are not greater than those between the different varieties of *locostoma* or *Gouldiana*.

In order to clear up the matter more easily I add here (fig. 12a) a copy of Pfeiffer's figure of *insignis*. I greatly regret that I have not got the opportunity of examining Mr. Theobald's two type specimens, figured in the *Conchologia Indica* as '*insignis*' and var. *gracilior*, but possibly I may be in a position to supply the deficiency in the next number of the Journal.

15. CL. VESPA. (Ad p. 205.)

The shell delineated by Mr. Blanford as a variety of *vespa* may be considered as a fair representation of that species; but I add a figure (15a) and description of a specimen obtained by Mr. Theobald at Tavoy, whence *vespa* was originally got, and which is undoubtedly Gould's species.

(15a). *Cl. testa orato-cylindracea, ad apicem obtusiuscula, albida, medio subinflata, ultimo anfractu sensim attenuata, haud rimata, fusco castanea; anfractibus sex, convexiusculis, sutura simplici junctis, transversim oblique et confertissime striolatis; apertura suborata, postice rotundate subangulata, antice late sub-effusa, intus violaceo rufa, peritremate modice expanso, interno oblique fere recto, libero, biplicato; plica antica, vel inferiore, valde obliqua, sub-immersa; plicis palatalibus novem tenuibus, supera longissima, circiter 1.2 m.m. a margine suturali distante, alteris brevioribus et inter se valde inæqualibus.*

Long. 24.6 m.m., *lat.* 7; *long. apert. cum perist.* 6.3, *ejusdem lat.* 1.8 m.m.

Although allied to *Phillippiana* the present form is undoubtedly quite distinct, differing from Pfeiffer's species by a more slender shape, smaller aperture, free inner lip, peculiarly flattened or almost canaliculated aperture on the anterior end, and by the larger number of palatal plicæ.

19. CLAUSILIA WAAGENI, n. sp.

Cl. testa conoideo-turrita, corneo-fusca, apice obtusiuscula, sub-rimata anfractibus 11, paulo convexis, sutura simplici junctis, lateraliter api-

com versus paululum concava; ommis transversim oblique confertim costulato-striatis, ultimo antecedente rix latiore, prope aperturam costulato, basi paulum contracto, convexiusculo; apertura verticali, postice (vel supra) angulata; peritremate modice incrassato, rix expanso, albescente, antice recedente, interno soluto, antice rectiusculo, biplicato, plica postica (aut superiore) brevi, altera rix conspicua; lunella distincta, plica longa, tenuissima superposita, altera brevi, a terminatione supera lunelle haud separata.

Long. tota 18, diam. 4; long. apert. obliq. 4, ejusdem lat. 2.7 m. m.

Hab.—Changligalli, prope Marri, Himalaya occident., ad altitudinem circa 9000 ped. angl. *detexit W. Waagen.*

This is the most westerly known species of the genus in India. A single, but perfect, specimen was found by Dr. W. Waagen, together with *Cl. cylindrica*, under the bark of an old tree at the above mentioned locality. The nearest allied species is *Cl. Iōs*, but the larger size of the shell, comparative shortness of the two last whorls, larger and more straight aperture readily distinguish this new form.

20. CL. ARAKANA, Theob. (M.S.)

Cl. testa stramineo-albida, subfusiforme-turrita, apice attenuata, aperturam versus subangustata, non rimata; anfractibus 10-12, paulum convexiusculis, sutura profunda simplici junctis, transversim oblique capillaceo striolatis; apertura rectiuscula, sub-rectangulari, antice subrotundata, marginibus modice dilatatis et incrassatis, labio breviter libero, fere recto, biplicato, plica antica (seu inferiore) valde oblique intrante; plicis palatalibus quinque, fere æquidistantibus et inter se parallelis, supera longissima, cæteris subæqualibus.

Long. 17-20; lat. 3.8-4; long. apert. 4-4.4, lat. 3-3.2 m. m.

Hab.—In montibus Arakanensis et ad Mai-i in provincia Sandoway dicta *detexit W. Theobald.*

This is the new Arakan species to which Mr. Blanford alludes at p. 205, when speaking of *Cl. monticola*; it differs from this last by its more fusiform instead of conoidally turreted shape, its thinner texture, larger aperture and somewhat differently arranged palatal folds. I have given illustrations of a shorter form with ten whorls and of another with twelve whorls, the former is a single specimen from the hills S. E. of Akyab, the other was collected by Mr. Theobald at Mai-i in the Sandoway district. These two forms represent the extreme variations which were noticed among a large number of specimens.

NOTICE OF THE MAMMALS AND BIRDS INHABITING KACHH,—
by DR. F. STOLICZKA.

[Received 28th May, read 3rd July, 1872.]

The study of local faunas must, for some time at least, continue one of the most important means of leading to a full understanding of Indian Zoology. India combines such an enormous variety of physical conditions, namely, differences in level, climate and vegetation, all of which have to be studied in connection with the animal life, that one is almost lost in the chaos of information required, and is very apt to overlook conditions, which may be essential for the explanation not only of peculiarities as regards distinctions of species, but also of those relating to geographical distribution.

Researches limited to single districts are not necessarily liable to these disadvantages, because they can more easily command the smaller amount of observations, and obtain an acquaintance with the physical conditions which may lead to their explanation.

It is with this view that I have ventured to place on record what little I observed of the Zoology of Kachh. I scarcely need to add that I greatly regret the incompleteness of the lists, but as the duties of the geologist are entirely different from those of a zoologist, he can hardly pretend to give satisfaction to both. During my rather hurried visit, my attention was chiefly directed towards the Vertebrata,* and in this branch I attempted to

* Invertebrata are also by comparatively small numbers represented, as may be indicated by the following notice:

Of Crustacea I have obtained only two species in the streams, a small *Palæmon* which is tolerably common, and a *Cladocera* (= *Brachopoda*, apud Milne-Edwards); the latter only occurred in a slightly brackish stream west of Bhuj. Mr Wood-Mason who examined the two species tells me that the latter presents a remarkable modification of the antennæ.—The Arachnoids, which were specially looked after, did not yield more than twenty species, chiefly of the families *Epeirida* and *Lycosida*, and a few *Salticida*. Of *Scorpions* I got four species; *Scorpenida* three; *Juli* two or three. The *Coleoptera* commonly seen mostly belong to the *Blaptida*, which form an important article of food to the hedgehog; *Scarabæida* and *Cicadida* are comparatively few, and still rarer other kind of beetles. Butterflies, on account of the almost constant strong winds, are very rarely seen, indeed with the exception of a few small *Pierida* and *Lycanida*, and a number of *Macrolepidoptera*, I have scarcely seen any other species. The *Hymenoptera* are mostly represented by *Ichneumonida*. Ants are a real pest in houses and in the camp, in spite of the dryness of the climate. Of *Rhynchota* my collection barely contains a dozen species, including the *Nepæ* and *Cicada*, but they must be more numerous during the wet season. Of *Libellulida* I obtained about ten species, and not many more are, I think, procurable in winter. *Blattida* I have seen three, the most common is *Periplaneta germanica*. Of *Acrulida* &c., about a dozen or more species occurred.

note down and to collect what was possible, without interfering with my other more important work. The list of the mammals and birds will be given in the following pages; on the reptiles and amphibians I have already reported, (see Proc. A. S. B., for May, 1872, p. 71); and the examination of the fishes was kindly undertaken by Surgeon Major Day, whose paper on the subject follows the present one.

However, before entering upon any details, it will be probably desirable to say a few words regarding the principal physical features of the country, particularly in connection with the mammals and birds to be met with; only adding here that my remarks solely apply to the aspect of the country during the cold and dry season between November and February.

The province of Kachh extends for about 150 miles along the Tropic of Cancer, having a breadth of about 40 miles on either side of it, and the Meridian of 70° eastern longitude passes through it a little eastward of the centre. The main land stretches along the seacoast from the most eastern branch of the Indus to Káthivár, from which it is separated by the Gulf of Kachh; to the North and East it is entirely isolated from Sind and the eastern Rajpútána states by the so-called Ran, which was no doubt formerly an arm of the sea, but is now very much silted in. It has a varied breadth from 40 to nearly 100 miles. During the dry and hot weather some portions of it are under water and others are so thickly covered with a saline deposit, or almost pure salt, that the ground becomes unfit for the support of animal life. A wild ass may be seen in the distance, or a desert-lark (*Certhilauda desertorum*) running along the trodden track, but scarcely any other animal exists, unless a bird may accidentally migrate from one place to another. During the rainy season by far the greatest portion of the Ran is inundated, and a good number of the larger water birds are said to be seen on it. The slightly elevated ground, which locally forms strips in the Ran proper, supports a very scanty vegetation of rough grasses (*Cyperaceæ*), and of a few scattered bushes of tamarisk &c.; this part is called the Buni and, if the monsoons are not heavy, it affords rich pasture for cattle during that time, but in the dry season even the nomadic Sindees are often obliged to

Of freshwater shells which, however, also occur in slightly brackish streams, I met with the following: *Planorbis crassus*; *Plan. n. sp.*, allied to *Caatoris*; *Lymnaea luteola* and *amgdalus*, the latter closely allied to *acuminata*; *Paludina dissimilis*, (*melanostoma*) exactly identical with South Indian and Ceylon specimens; *Bythinia pulchella* and two other species of the same genus; *Melania tuberculata*; *Unio carulus* and *leionax*; and a small *Corbicula*, apparently very rare.

Of landshells I found *Bulinus insularis*, *B. abyssinicus*, *B. punctatus*, *B. cœnopictus* and two other *Bulina*, allied to the last, one slightly and the other very much, thinner, almost cylindrical; *Eumica bicolor* (cylindrical and perfectly smooth variety); *Stenogyra gracilis*; *Helix fallaciosus* and *Tranquebarica*, *Macrochlamys pedum*, *Succinea ritra* and *crassiuscula*. With the exception of *Bul. insularis* none of the shells is common.

leave it for want of water. Wherever intercalations of clayey beds between sandy layers make a slight accumulation of fresh water possible, Kunda-treets (*Prosopis*) grow rather abundantly and form little forests, sometimes of one or two miles in length, but generally very narrow in breadth. However, little life animates these isolated tracts.

Among the Kunda *Sylvia curruca*, *Phylloscopus tristis*, *Lanius lahtora* and *vittatus*, *Saxicola desertorum* (= *atrogularis*), *Turtur Cambayensis*, *Upupa Ceylonensis*, *Athene brama* and perhaps a few of the smaller hawks, and the ubiquitous *Sciurus palmarum* are almost all the birds and mammals to be observed, in addition to the usual camp followers, kites, crows, pigeons, &c. The herds of cattle and sheep are invariably accompanied by *Dicrurus albirictus*, and wolves, hyænae, and generally also a leopard are not far off. On the woodless portions of the Buni, almost the only birds to be seen are *Spizalanda deva*, *Alauda triborhyncha*, *Pterocles exustus*, *Cursorius Jamesoni* (= ? *gallicus*), *Chettusia gregaria*, and one or two others of the cursorial tribe.

The little islands in the Ran, called Beyts, are nearly quite uninhabited, and on the slightly larger ones a harrier and a stonechat (*Circus Swainsoni* and *Saxicola picata*), or perhaps locally a stray dove, the pursuer and the pursued are all that an ordinary observer would notice of animal life.

The more elevated ground can be physically divided into three, (or perhaps four) nearly parallel ranges, extending almost due east and west. Each of these ranges has an abrupt declivity on the northern and a very gradual slope on the southern side. Thus the greatest elevation in each range lies near the northern edge, where precipitous cliffs and moderately hilly tracts occur; but as the greatest height of any of the hills in Kachh does not exceed 1500 feet, and as the entire breadth of the hilly portions is rarely more than three or four miles, they are not capable of producing any essential effect upon, or change in, the general climatal conditions. The hills are as a rule only thinly covered with brushwood, mostly consisting of leafless and thorny bushes, and oftener they are almost entirely bare.

The first of the ranges occupies Pacham, Karir, Bela and a few adjoining small islands in the Ran; their northern declivities are for want of water entirely uninhabited, but each has a long and gradual, though very thinly populated, slope to the south. On the eastern and western sides, the ridge rather abruptly disappears under the Ran, to the south the slope gradually passes into the Buni, and Bela is scarcely separated from Wagur, which is the most eastern district, moderately but very irregularly hilly, composed of short ranges and a few isolated basalt hills; and towards the west connected by low, mostly cultivated, ground with Kachh proper. The second (the Jora-Hulan) range stretches along the northern edge, and the third, the Charvar

and Katrol range, nearly through the centre of the mainland of Kachh. These two ranges more gradually decrease in height towards their ends and join each other near the western extremities, but diverge on the eastern side, the former passing in its prolongation through Wagur. The fourth range is the lowest, lying south only a short distance from the Charvár-Katrol range, and is sometimes not very distinctly separated from it; it entirely consists of basaltic trap and is locally rather thickly covered with bushes and Kunda.

As the configuration of the ground very much depends upon its lithological structure, I may notice that sandy or shaley limestones only occur in the axes of the first and second ranges, but far more prevalent are sandstones and shales. Solid basalt and quartzitic rocks occur in isolated hills, or in dykes, and there are also a few shorter and longer ridges consisting of varied trap-rocks which easily break up in fragments and, if any moisture exists, readily decompose. Decomposition goes on, however, at a much more rapid pace in the softer rocks, namely, the sandy limestones, sandstones and shales. It is indeed often not easy to meet for days with a rock, that would not crumble almost under the fingers, unless it be accidentally hardened, by a neighbouring basalt dyke, or some other causes producing dislocations of strata, &c.

On account of this rapidity with which the disintegration of the rocks has been going on from time immemorial, all the depressions between the hills, the ravines and river courses, had been deeply filled up with sand, which with equal facility also spread into the longitudinal valleys separating the principal ranges. Thus instead of fertile valleys, we meet with extensive sandy plains, which are capable of supporting only a very scanty vegetation, and the monotony of which is merely interrupted by an isolated basalt hill, or a trap or quartz dyke of a few miles in length. There exists some geological evidence which indicates, that at least along the northern precipitous slopes of the ranges locally a very large accumulation of water had taken place in comparatively recent geological time, and then moisture, vegetation and animal life might no doubt have in equal proportion been greater and more prosperous. It was probably also at that somewhat remote time, when the great and deep ravines had locally been cut, the existence of which, with the present comparatively insignificant water supply, it is almost impossible to explain. But now the fine water sheets have given way to desert ground, on which the sand is shifted about at the will of the agitated atmosphere.

The prevailing, and usually heavy, winds within the greater part of the year, appear to come from South-West or West, although during the cold season North-east winds are by no means uncommon. But instead of bringing any moisture from the sea side, they seem to take away the little which exists. The ground is so dreadfully heated under the powerful glare of a rarely covered sky, that it seems entirely to prevent even the approach of

moisture, unless the atmosphere be near the point of saturation; and this seems indeed to be of very rare occurrence.

Mr. Wynne, in whose Memoir on the Geology of Kachh* the physical geography of the province is briefly referred to, states that the average rainfall for the last twenty-one years up to 1869 was only 14·3 inches; within the three past years the annual fall scarcely exceeded ten inches. Some tracts of the country had actually barely a drop of rain during the whole year, and these had to be deserted during the dry season by the inhabitants, who generally on such occasions betake themselves with their cattle to Sind, returning to their homes during the following rainy season.

This state of affairs is not in any way mitigated by a marked change in the general temperature of the air. Ice is apparently quite unknown in Kachh. On very cold mornings in December and January, I occasionally saw the thermometer as low as 35,^o but it never sank to freezing point, and that comparatively low temperature was observed only along the Ran, where the wind blowing across the wet Ran was cooled down. Even in those two months the thermometer was rarely under 80^o or 90^o after midday in the shade, and in February, it generally rose to about 100.^o In the sun I have not seen it a single day under 100 degrees.

In consequence of this scarcity of rain, on account of the great heat, and further on account of the abundance of superficial sandy deposits, large rivers are entirely unknown, at least during the greater part of the year. The little water, which is supplied by a few springs in the hills, is generally lost in the sand before it reaches the desert plain, or it accumulates into small pools and hollows in suitable places, where clayey beds retard or stop the percolation through the sand. But in slowly passing through the sand, the water becomes more or less saturated with various salts, the consequence being that, if any running water at all is to be met with in a stream, it is in nine cases out of ten brackish,—not wholesome for beasts and deadly for men. But even in the wells, which the people sink for purposes of raising water for irrigation, this is often brackish, and it is sometimes with the greatest difficulty that perfectly fresh water can at all be obtained near a village. The simple recollection of the foul and dirty fluid, that one is occasionally obliged to accept in order to quench his thirst, is enough to make one shudder.

All these elements of physical condition, to which I have briefly referred, tend towards making the country a *terra hospitibus ferax*, an expression often repeated for want of a more suitable one, or, as an early traveller expressed himself, a country fit only for a geologist to travel in. The general result of those unfavourable physical conditions is, that we have before us a few ranges of low hills of 80 or 100 miles in length, varying in height from

* Mem. Geol. Survey of India, vol. IX, p. 12 et seq.

about 300 to 1400 feet, either bare, or covered with scanty grass or low thorny bushes, and intersected by dry ravines filled with debris and sand. Except along their edges these hilly tracts are scarcely at all inhabited. The depressions separating the longitudinal ranges more resemble in the average time of the year a desert than a habitable country. The ground is mostly very sandy, and although naturally not unproductive, it is sterile for want of moisture. Enormous bushes of *Euphorbia nerifolia* take the place of what elsewhere might be a forest, or at least a thick jungle. A few fig-trees near the villages is all that may deserve the name of a tree, and even these are by no means plentiful. During a tolerably good rainy season, the fields generally yield a crop of either barley or wheat, or other seasonal fruits; during the cold weather, however, scarcely anything but a very inferior crop of cotton can be earned; and this only locally. A fair crop is, however, generally possible, wherever the people are able to obtain a sufficient quantity of water from the wells for irrigation. In this they often succeed best in those localities which lie along, or not far from, a fault in the rocks, because this usually stops the escape of water. Whatever mischief the numerous trap-dykes and basaltic eruptions might have produced at no very distant geological period, it is very fortunate for the country, that they are so numerous; for I would scarcely hesitate to say that without them by far the greater part of Kachh would long ago have become a perfect desert. Each village has, it is true, its small tank, but unless the retention of water is facilitated by some natural cause, it is sure to have dried out about the middle of the cold season. Wherever a tank with good deep water exists by the end of February, it is almost certain to have been washed out in a hollow of clayey beds, or it rests towards a fault of the rocks, or a quartzite or trap-dyke. In some cases men might have taken advantage of the natural situation, and assisted the reservoir by an embankment, but as a rule, the Kachh people seem to be rather indifferent to this necessity of human and animal comfort, and in this special case, one might justly say, the necessity of life.

Out of the great number of tanks, which are, strictly speaking, the only water reservoirs, five or six average a mile, or a little more, in length, and might deserve the name of small lakes. In other parts of India they would probably be little thought of, but in a dry country, such as Kachh is, they are of no small importance. In the monsoon time they are of course of greater extent, but even at the greatest height of the water supply, the low situation of these reservoirs, sometimes in deep hollows, precludes the use of the water for purposes of irrigation; they are, however, during the cold season the only places to which a large number of waterfowl of all kinds resort.

Having thus become acquainted with an outline of the physical features of Kachh, we may better be able to understand the association of the mam-

mals and birds which I shall enumerate in the following pages. Of course judging from both the uniformity, as well as the scarcity, of favourable natural conditions, one could *a priori* only expect a very poor fauna and flora. The vegetation of the country in general, setting aside that of the cultivated tracts, may indeed be regarded as a picture of sterility. Very few flowering plants are to be seen in the dry season. Among the herbaceous plants* those growing on sandy or saline ground naturally prevail over others, and their leaves are often leathery and thick, or sometimes reduced to spines and thorns. Among saline plants the most common are *Statice Stocksii*, *Solanum trilobatum*, and a *Pluchea*. Of other more common species of herbaceous plants I may notice: *Trichodesma indicum*, *Heliotropium supinum* and *strigosum*, *Solanum nigrum*, *Crotalaria Burhia*, *Orygia decumbens*, *Phalangium graminifolium*, *Vahlia viscosa*, *Salvia aegyptiaca*, *Convolvulus pluricaulis*, *Cressa Cretica*, *Polygala Vahliaana*, *Glinus mollugo*, *Polygonum plebejum*, *Euphorbia thymifolia* and *E. dracunculoides*, *Evolvulus alsinoides*, *Aristida depressa*, *Arva Javanica*, *Vernonia cinerea*, *Trianthemum crystallinum* and *T. decandrum*, and others. Mr. Kurz determined about one hundred species out of a small collection I made; a few appear to be new. The low jungles barely deserve this name, for they are almost entirely composed of thorny bushes (*Capparis aphylla*) with little or scarcely any foliage. Among others I may mention *Tamarix orientalis*, *Celastrus senegalensis*, two species of *Grewia*, and *Crataeva Roxburghii*, the last growing into a tree, also Kunda (*Prosopis spicijera*.) is locally numerous, but scarcely more generally distributed than the *Cactus* like *Euphorbia nerifolia*, which often for miles suppresses all other semiarboreal vegetation. The only fine trees to be occasionally seen are *Ficus religiosa* and *F. Bengalensis*, in the neighbourhood of villages or near wells, where they are planted as a shelter against the heat of the day.

Extensive forests are, as already observed, unknown, and, naturally, we would look in vain for any of the large Carnivora, (except as mere stragglers), and the existence of large Pachyderms or Ruminants is made entirely impossible. Equally so we almost entirely miss the true forest denizens of the feathered tribe, such as the *Bucerotidae*, *Picidae*, *Certhiidae*, *Sittidae*, *Phasianidae*; a few of the Eastern type of birds like the *Eurylaimidae* or *Treronidae* are also entirely absent, their geographical distribution† being rather limited. But other families, which might be expected to

* I am indebted to Mr. S. Kurz for the names of the plants.

† Too much importance is I think, occasionally attributed to the so-called laws of geographical distribution, independently of other agencies, as if these laws were innate to the animal. When speaking of the geographical distribution of a species, one is apt to forget, that these geographical limits are *mainly* dependent upon the physical conditions, required for, and suitable to, the existence of a certain species.

occur, likewise shew very few representants, such as the *Muscicapidæ*, *Ampeplidæ*, *Fringillidæ*, *Corvidæ*, &c.

Among the brushwoods the common birds are *Pycnonotus chrysorrhoides*, *Otocampus leucotis*, *Lanius vittatus*, *Iora Zeylanica*, *Sylvia curruca*, *Munia Malabarica*, &c., less numerous are *Phyllopus castus*, *Pericrocotus peregrinus*, *Orthotomus longicaudus*, *Dryocopus Jerdoni*, *Phylloscopus tristis*, *Tiphrodornis Pondiceriana* and a few others, while *Parus nuchalis* or *Leucocerca aureola* are great rarities. Hunting between the bushes on the ground, we meet with *Thamnobia Cambagensis*, *Citrinella Huttoni* and *Chloroceryle caudata*, always in company with *Franklinia Buchananii*, and on still more open ground *Saxicola picata* and *deserti* (= *atroregularis*). The above are actually the only very common birds, and five of each may at any time be seen for every one of any other kind.

In the sandy plains we meet with a great number of GRALLÆ, particularly *Otididæ* and *Charadriidæ*. Among these *Cursorius Jamesoni* (= *gallicus*), *Chettusia gregaria*, *Lobivanellus indicus*, *Sarcophorus bilobus*, *Grus cinerea*, *Houbara Macquennii*, are characteristic of the country; several of these depart during the summer, but are replaced during the rains by the Florikan, *Sypheotides auritus*, which is said to arrive in large numbers in the rainy season.

The starlings, grey partridges, pigeons, and doves keep, naturally enough, near the villages. In the fields few other larger birds except *Geronticus papillosus* and *Buphus coromandus*, and occasionally *Grus antigone*, are to be seen; of smaller birds *Agrodroma campestris* and several species of larks are common. Both Grallatores and Natatores are abundant on the small lakes and tanks. Indeed scarcely a pool of water, if only thirty or forty feet in length, will be met with without some species of *Actitis* or *Totanus*, but particularly common are *Himantopus intermedius*, *Spatula clypeata* and *Querquedula crecca*. On the somewhat larger tanks one is certain to meet besides these with the gadwall (*Chaulelasmus streperus*), the pintail (*Dafila acuta*), the little grebe (*Podiceps minor*), and also *Limosa agorophala* and one or the other of the white *Herodias*. Naturally in an open country, where sport is comparatively easy, birds of prey would not be wanting, and amongst these *Falco jugger*, *Hypotriorchis chiquera*, *Aquila fulves-*

A change in the physical conditions of a country will be rapidly followed by a corresponding change in the fauna, either decreasing or increasing, and thus the geographical limits of a species become mainly dependent upon physical conditions. To give an example, I mean, that if for instance one of the low hill ranges of Kachh, averaging a height of a few hundred feet, was replaced by one of similar mineralogical character and of an average height of 5000 feet, we would very soon find it wooded, and then inhabited by an abundance of Malabar forms, although these would be absent in the intervening desert country. An actual example of this may be seen on Mount Abo, as known from Dr. King's list of birds.

cens and *Buteo ferox* are to be seen almost everywhere ; many others are more local.

Perhaps a better general idea of the character of the vertebrate fauna might be formed, when we inquire what the country is capable of supporting all the year round, and at the same time exclude those animals, the existence of which mainly, or entirely, depends upon the presence of man and his habitations.

Among the mammals we find the Rodents most prevalent,—*Gerbillus erythrouros*, *Sciurus palmarum*, *Lepus ruficaudus*,—the first being by far the most common, and next come the Indian antelope and gazelle ; thus all vegetable feeders.

If we exclude from the 160 species of birds, which I obtained, the so-called camp-followers, we find that about half the remainder are migratory, therefore merely winter visitors. And although some of the migratory birds may in a favourable hot season remain in the country, others which are generally considered as permanent settlers often partially migrate to more suitable localities in India. Among these I may mention for instance *Ceryle*, *Pratincola*, *Coracias*, *Ptionoprogne*, *Caprimulgus*, *Citrinella*. Therefore, in an ordinary summer season I certainly do not expect that more than about one hundred species of birds are to be met with in Kachh, really a very small number, when compared with what one is used to observe on a similarly large area in many other parts of India.

Of Reptilia and Amphibia I have observed thirty species ; and, although this number is decidedly larger during the rains, not more than half a dozen of them are really of common occurrence. (Comp. Proc. A. S. B., May, 1872, p. 71).

The fresh-water fishes, which I collected, belong, according to Dr. Day, to eighteen species ; there is only one Siluroid among them, most of the others belong to the *Cyprinidae*, and one is a *Cyprinodon*, the first species of the genus known in Indian fresh-waters. However small the number may appear to be, I almost doubt if it could be much increased ; for where rivers are almost unknown, and where half of the tanks are liable to disappear for several months during each year, and where besides such a number of skilful fishers* are eagerly employed during a time when the water is lowest, fish have not much chance to prosper.

* About forty species of *Grallatores* and *Natatores*.

MAMMALIA.***Primates.**

I have only on a single occasion seen a *Presbytis* which appeared to be in a wild state. It came towards the evening to drink at a tank some distance from the fort Kannir (in the south-eastern part of the Wagur district), and as its entire face was jet black, I presume, it was more likely *P. priamus* than the Bengal *P. entellus*, but I could not approach sufficiently near to ensure the identification.

Besides that, I saw both *Inuus rhesus* and *Macacus radiatus* in captivity, but they appear to have been imported.

Chiroptera.

The notes on this order have been kindly communicated to me by G. E. DOBSON, Esq., B. A., M. B.

Fam. RHINOLOPHIDÆ.**PHYLLORHINA FULVA, Gray.**

Of the specimens of this species obtained, two, a male and female, were taken at the same time and place. The fur of the female specimen is bright golden yellow, that of the male white at the base of the hairs for more than three-fourths their length, the remaining portion to the tip dark purplish brown. The male is larger than the female which is apparently not quite adult.

This proves the identity of *Ph. fulva* with *Ph. murina* and *Ph. cineraceus*, and leads to the belief that *Ph. ater* and *atratus* are also synonyms of the same species. This remarkable variableness of the colour of the fur is not, however, confined to this species, it is met with also in other Rhinolophine bats: in *Ph. larvata*, Horsfd., for example, where the colour of the fur varies from bright orange fulvous, with brownish or ferruginous tips, to bluish black with black tips, a circumstance which has given rise also to much confusion, as the species has received as many names as the different colours of its fur. The same remarks apply to the species of other families of Chiroptera, notably to the PTEROPIDÆ.

Other male and female specimens of this species were also obtained about the same time, the fur of all presents the same colour:—white with dusky tips to the hairs. This shows that the colour of the fur in *Ph. fulva* does not depend on locality, or season. The smaller size of the fulvous female specimen referred to above, taken with its less perfectly developed

* The systematic names and further observations on the species recorded will be found in Jerdon's 'Mammals of India,' except in a few cases where a special reference, or a description, is added.

teeth, and apparently not quite complete ossification of the extremities of the metacarpal and phalangeal bones, indicates age as a very probable cause of the differences of colour that have been observed. The young of the first and second year most probably present this golden fulvous hue which gradually changes to white, as the animal attains the adult condition.

The following table gives the measurement of the two specimens first referred to; and of another, an adult female, from the same locality, with white fur, tipped with purplish black.

	♂	♀	♀
Length, head and body.....	1.9	1.75	1.9
" tail,	1.15	1.15	1.1
" head,	0.75	0.7	0.75
" ear, anteriorly,.....	0.85	0.8	0.85
Breadth, ditto,	0.65	0.65	0.65
Length, forearm,.....	1.55	1.55	1.55
" thumb,	0.3	0.3	0.3
" second finger,	2.45	2.4	2.5
" fourth ditto,	2.0	1.9	2.1
" tibia,	0.7	0.7	0.72
" foot and claws,	0.32	0.32	0.32

Generally distributed, but not common.

Fam. RHINOPOMATIDÆ.*

RHINOPOMA HARDWICKII, Gray.

This species is extremely common, usually taking up its abode in wells. All possess large accumulations of fat posterior to the anus, in much greater quantity than usually observed, the mass of fat in many individuals probably much exceeding in weight the remainder of the body.

Fam. NOCTILIONIDÆ.

TAPHIOZOUS KACHHENSIS, Dobson, n. sp.

In form, colour of the fur, and size corresponds very closely with *T. saccolaimus*, Geoff., but easily distinguished by the complete absence of the gular pouch in both male and female. A small fold of wing-membrane forms a shallow pouch in the angle between the radius and fifth metacarpal bone, much less developed than in *T. longimanus*, Hardw. Ears as in *T. saccolaimus*, but slightly larger, and the tragus is naked; inner margin bordered with a row of small papules.

* I have formed this family, provisionally, for the reception of the genus *Rhinopoma* of which the type, *Rh. Hardwicki*, is the sole representative. This genus has been classed by Des. Gray and Peters with the *Megadermata*, but, on carefully comparing the skeleton of *Megaderma tupa* with that of *Rhinopoma Hardwicki*, I find not the least osteological connection. The genus is, evidently, far more closely related to some of the genera of *Noctilionidæ* than to *Megaderma*.

	♂	♀
	Inches.	Inches.
Length, head and body,	3.35	3.6
" tail,	1.15	1.25
" ditto, free from membrane,	0.5	0.4
" head,	1.2	1.3
" ear (anteriorly),	0.9	0.9
Breadth ditto ditto,	0.5	0.5
Length, tragus,	0.24	0.24
Breadth, ditto (greatest),	0.17	0.18
Length, forearm,	2.65	2.95
thumb,	0.45	0.45
" second finger,	4.4	5.0
" fourth ditto,	2.3	2.8
" tibia,	1.0	1.1
" calcaneum,	0.85	0.9
" foot and claws,	0.55	0.65

Fam. VESPERTILIONIDÆ.

Genus. VESPERUGO Keys. Blas. Sub-genus *Pipistrellus*, Gray.

PIPISTRELLUS LEUCOTIS, Dobson, n. sp.

Ears triangular with rounded tips; outer margin slightly concave beneath the tip, then convex, emarginate opposite the base of the tragus, and terminating in a small lobe. Tragus slightly curved inwards and rounded at the tip. Glands of upper lip well developed, causing a slight depression on the face behind the nostrils. Tail long, wholly contained within the interfemoral membrane. A well-defined, rounded lobe posterior to the calcaneum.

Ears, sides of face about the eyes, interfemoral membrane, antehumeral membrane, and that portion of wing-membrane along the sides of the body, white, very translucent; remaining portion of wing membrane sepia, traversed by white reticulations. Fur, on the upper surface, black at the base of the hairs for about half their length, remaining portion light yellowish brown; beneath, somewhat similar.

The fur of the head extends forwards as far as the labial prominences which are thinly covered with a few short hairs; in front of the ear and about the eye the side of the face is almost naked. On the upper surface the fur of the body extends outwards, covering the proximal third of the humerus and the wing-membrane thence, backwards, to the knee joint; posteriorly, the anterior third of the interfemoral membrane is covered; beneath the fur of the abdomen extends upon the wing-membrane to nearly the same extent as on the upper surface, and the interfemoral membrane is clothed with a few, short hairs.

Upper incisors long, blunt, with a distinct cingulum; outer incisors minute, scarcely exceeding in vertical extent the cingulum of the inner ones, placed close to their sides, and separated from the canines by a small space on either side. First small premolar in the upper jaw, in the angle between the closely approximated canine and second premolar, very minute, not distinguishable without a lens.

The following are the measurements of two adult male specimens. The measurements in the first column are those of a specimen in the Indian Museum from Rajanpúr, sent by Dr. W. F. Murray, Assistant Surgeon 3rd Panjab Cavalry, and not previously described; the second column relates to the Kachh specimen.

Hab.—Rajanpúr, Panjáb frontier; Kachh.

	Inches.	Inches.
Length, head and body,	1·7	1·8
" tail,	1·5	1·55
" head,	0·65	0·65
" ear (anteriorly),	0·55	0·55
Breadth, ditto,	0·35	0·35
Length, tragus,	0·22	0·23
Breadth, ditto,	0·07	0·07
Length, forearm,	1·30	1·35
" thumb,	0·2	0·22
" second finger,	2·25	2·25
" fourth finger,	1·7	1·7
" tibia,	0·5	0·5
" calcaneum,	0·55	0·55
" foot and claws,	0·25	0·25

Besides these four species the only other bat I observed was a large *Pteropus*, of the size of *Pt. medius*, Tem.; I saw it on several occasions about Bhúj, but failed to secure a specimen.

Insectivora.

The only shrew which I obtained, and which is far from common, belongs, according to Dr. Anderson's determination, to *Crocidura murina*, Lin.

Of hedgehogs also one species occurs. It represents a new species.

ERINACEUS (HEMIECHINUS*) PICTUS, n. sp.

Head elongate, pyramidal; snout produced, considerably extending beyond the lower jaw, with the nostrils somewhat swollen, representing a longitudinal slit on the upper side; ears moderate, obtusely rounded at tip, and rather abruptly truncate laterally; a very conspicuous, almost perfectly nude,

* Fitzinger (Sitz. Akad. Wien, M. N. Klasse, 1867, vol. 56, part I, p. 858,) uses this name in a generic sense, as distinct from *Erinaceus*.

tolerably broad space extends from the hind head towards the middle of neck; spines, beginning on neck slightly in advance of a line connecting the anterior basal edges of the ears, almost regular in young, but distinctly irregularly* interwoven in the more adult; each spine white on the basal half, then with a broad blackish brown ring, followed by a yellowish white tip, only the extreme point appearing slightly dusky; each is further surrounded by sixteen to twenty longitudinal grooves, separated by much broader and very finely tuberculated ridges; the minute tubercles being laterally compressed. Limbs long and slender, each with five claws; tail very short and concealed.

Snout, extending on the upper side as far as between the eyes and from there stretching as an oblique band through the eyes to the base of the neck, dark brown with very few whitish hairs intermixed; ground colour of ears brown, but thickly set with whitish hairs, lower jaw round the edges brown, chin and throat whitish tinged with brown in the young, almost perfectly white in adults; fore-limb beginning at the middle of the forearm, the hind limbs entirely, including the region of the vent between them and at their sides, and the tail chocolate brown; soles of feet blackish and all the claws white. Moustaches brown, whitish towards their tips, the longest nearly two inches. An oblique streak in front of and below the eye to the angle of the mouth, hind head and all round the neck, involving the base of the ears, the entire lower side from the chin, including nearly half the length of the fore-limbs, and extending backwards as far as the region between the hind-limbs white, the lower side being thinly clad with hairs which are throughout arranged in small tufts, each tuft evidently corresponding to a dorsal spine, as if each of the spines had been dissolved into its original component parts.

Total length of a specimen 5·5 inches; distance from tip of snout to anterior angle of eye 0·8; length of ear 0·55, and the greatest breadth about 0·4; length of carpus to tip of claws 0·8, the same of foot 1 inch, the heel tubercular; tail 0·4 inches, thickly covered with hair.

Besides this specimen which is the only one I preserved, I saw several others in the western part of Kachh, and some were decidedly larger; one measured 6·3 inches, the distance from the tip of snout to the eye being nearly 1 inch, and to the base of the ear nearly 1·5 inch. There are also several specimens of this species in the Indian Museum from the North West Provinces about Agra, and from Rājputāna. One of these measures nearly 7 inches from tip of snout to end of tail.

* The regularity of the spines seems very much to depend upon the attitude of the animal. When the animal is at rest, and the spines are in their natural position, they are as a rule regularly directed backwards, but the moment the animal rolls in its body, they become interwoven.

In comparing the present species with the descriptions of hedgehogs known from Asia and adjoining territories, and which belong to the section *Hemiclinus*,—characterized by having the ridges on the spines tuberculated and five toes on all feet,—I find that *E. ethiopicus*, Ehrenberg, = *E. brachyactylus*, Wagner, is most closely allied to it. It slightly differs in coloration, in having the forehead white, the chest brownish; each of the tubercles on the spines is seated on a separate eminence, and the tail is longer. Other similarly coloured species are *E. alpinus*, *aspyticus*, *pallidus* and *libicus*, all from North Africa, but they more or less differ in structure. Besides that there are two other African species *E. platyotis* and *persialis*,* both of which are quite different in coloration, and *E. auratus*, Pallas and *hypnachus*, Brandt, are from Northern Asia.

From India Jerdon describes out of the section *Hemiclinus*, *E. collaris* and *micropus*, the former being found in Northern, the latter in Southern India.

In *collaris* the ears are externally somewhat indented, but not to any particularly large extent. The spines are rather long and cylindrical, usually with a broad black tip, each is surrounded by 22 to 24 longitudinal grooves separated by equally broad ridges, which are rather sharp and somewhat distantly finely tuberculated.

Very closely allied to *collaris* are no doubt Bennett's *E. Georgi* and *spatungus* both from the Himalayas; but until authentic specimens had been examined, it does not appear advisable to identify all three.

In *E. Georgi* each spine is stated to be yellowish white for more than half its basal length, followed by a narrow blackish ring, and again white at the tip. The coloration of the head and underside does not appear to differ from that of *collaris*. The ears are said to be long, obtusely pointed, but scarcely thickened towards the tip, and laterally not emarginate.

E. spatungus is said chiefly to differ by the regular position of the spines, but this is a character which very much depends upon the position of the body. It seems probable that the type specimen is only a young one of *E. Georgi*, should this really prove to be distinct from *collaris*.

E. megalotis, Gray, also from the Himalayas, is recorded as distinguished from others by a black chin; nothing further is known of it.

In *micropus*, which is undoubtedly the same as *auticentris*, the spines are thin, rather short, with a long point and of a similar colour as in *E. persus*, but each is surrounded by 17 or 18 longitudinal grooves, separated by only very little broader ridges which are provided with moderately distant blunt, and nearly rounded tubercles.

From Afghanistan, Blyth described *E. megalotis*,† which in colouring more resembles *hypnachus* than *auratus*, each spine being dusky at base and near the middle, and blackish brown towards the tip, which again is paler. Each spine is further surrounded by about 28 to 30 longitudinal fine furrows, separated by about equally broad and fine ribs, which are minutely tuberculated; some of the ribs are occasionally thinner than others. This character alone separates *megalotis* from the two other allied species with large ears.

In looking over the specimens of hedgehogs in the Indian Museum I noticed an apparently new species which was lately collected by Dr. Henderson when accompanying the Yarkand expedition, and I shall give a short description of it under the name of

* Fitzinger in Sitzb. Akad. Wien, M. N. Klasse, vol. 56, part I, p. 859.

† Journ. Asiat. P. B. vol. XIV, p. 353 and vol. XV, p. 170.

Erinaceus (Hemiechinus) albulus, n. sp.

Snout very long and pointed, ears moderate, ovate at tip; spines irregularly placed, much as in *pietus*, but comparatively longer and thicker; each of them is dusky at the base, then up to half its length purely white, followed by a blackish brown ring, its breadth being only about one fifth of the total length, tip largely white and rather abruptly pointed, the result being a prevalence of white colour on the upper surface of the body. There is no perceptible nude space between the ears, and the spines begin immediately on the hind neck, and the largest on the back are fully one inch long. Each spine is surrounded by 24 to 26 fine longitudinal furrows, separated by minutely tuberculated ridges, scarcely wider than the furrows. The tail is almost as short as in *pietus*.

Head entirely rufescent above and at the sides, except upper mandible towards the angle of the mouth, this being white; base of ears also white, as well as the entire underside, which is thickly set with long hairs, passing into a slight rufescent shade on the sides of the belly. Ears, lower portions of front and hind feet and tail dusky brownish, being thickly intermixed with short, white hairs; moustache brown, whitish towards the tip. Claws strong, five on each foot, very pale brownish.

The only specimen measures very nearly seven inches; the ear slightly exceeds one inch; distance from tip of snout to the angle of the mouth not quite one, to the ear slightly more than one and a half inch. Dr. Henderson gives the locality, 'Langur near Sanju; Yarkand,' and the native name 'Keepa.'

The only known form to which the present species is closely allied is *E. lybius*, Ehrenb., which has similarly grooved and similarly coloured spines, but they are decidedly shorter, and the coloration of the other parts of the body is different.

From all the above noted species which, as I stated, are referable to the section *Hemiechinus*, *E. albicentris*, Wagn., differs by having only four toes on the hind feet, and the spines sulcated and smoothly ridged. The type specimen, which is 6.5 inches long, is believed to have come from the East Indies, but its precise locality is unknown; it is in the Berlin Museum. The distinctive characters noticed also occur in the Egyptian *E. penardi*, and Fitzinger separates both as '*Peroichinus*.'

The true *Erinacei* have five toes on each foot and smoothly striated spines. Of the five species known only *E. europæus*, namely the Siberian variety, may be found in the Himalayas.

Carnivora.

Ursus labiatus occasionally occurs in the Wagur district, and I was told of a specimen having been shot on Béla, but it is evidently only a very rare straggler.

I have not on a single occasion seen either a marten (*Martes*) or a weasel (*Mustella*), though I was told that at least one species of each does occur.

Of the *Felidae*, both the lion (*F. leo*) and the tiger (*F. tigris*) extremely rarely occur as stragglers from Káthiavár, they had been formerly shot in Kachh territory, and a century ago they might have been more common.

The larger variety of the pard (*F. pardus*), usually called panther, is up to the present time not uncommon in some districts. It keeps to the thinly wooded and rocky parts of the country, and its favourite sport constitutes a monopoly with the present Rao of Kachh.

The common jungle cat (*F. chaus*) is the only representant of the smaller *Felide*, and though not abundant it is met with occasionally throughout the country.

The red lynx (*F. caracal*) is, however, certainly rare, as it likewise is in other parts of India. I have only seen one animal shot some years ago by the Rao of Kachh, but I heard of it in different parts of the country. Like the pard, it seems to be very fond of digging after *Uromastix Hardwickii*, which in common with some of the inhabitants it appears to find a very tasty meal.

F. jubata, the hunting leopard, was seen by me only on one occasion in the Wagur district (north of Chitrore), but I could not obtain any information as to its further occurrence. It seems to be scarcely known in the western and southern parts of Kachh.

The striped hyaena (*H. striata*) also occasionally occurs in the eastern parts of Kachh, and about the Rann islands. I have, however, nowhere heard of a single *Viverra* or a *Paradoxurus*, which no doubt prefer forest to open country.

132. *Herpestes griscus*, called by Jerdon the 'Madras Mangoos,' is the only species of this genus, and generally distributed, though not very common. Body of a male 18", tail 15"; a female which I shot was somewhat larger. The general colour of the fur above is (in winter) brown, grizzled with white; the longer hairs are adpressed and very long, particularly at the sides, each with four to five dark brown rings, separated by pale white, the two colours passing into each other by a rufous brown tint, which, during the summer, in some individuals at least, appears to prevail over the dark brown, and when in older skins the brown fades, the rings may be described as rufous, but they certainly are not so in fresh skins. The white rings generally have barely a tinge of yellow, in some specimens they may be said to be pale fawn colour. The elongated hairs at the lower side are broadly tipped with fulvous fawn, and those at the end of the tail are mostly of that colour, which in so far may be said to be concolorous with the body. The sides of the snout, particularly in front and about the eyes, are distinctly rufous, more so in the male than in the female, and the entire head is also tinged with more rufous, than any other part of the body. Ears light brown, thickly set with short hair, more mixed with white in front than behind. General colour below fawn, the rings on the hair being pale brown and on many nearly obsolete. Feet in front rufous brown, speckled with white; claws brown, pale towards the tips; soles dark fleshy brown; muzzle reddish brown.

The Indian Wolf (*Canis pallipes*) is tolerably common in the Wagur district and on the Rann, but less so in Western Kachh, while the jackal (*C. aureus*) abounds everywhere. Pariah dogs are, as may be imagined com-

mon enough, and some very much resemble in structure and colour the wild dog (*Cuon rutilans*), but I have not heard of the occurrence of this latter in a wild state.

Both the Indian and the desert fox, *Tulpes bengalensis* and *leucopus*, the latter generally called the silver-tailed fox, occur; the former I have shot only in the north-eastern districts, but the latter appears to be more generally distributed, though not very common.

Rodentia.

The homely *Sciurus palmarum* is the only species of squirrels to be met with, both about habitations and in the Kundu jungles.

The ground is claimed by the desert Jerboa-rat, which Jerdon identified with (No. 171) *Gerbillus** *erythraurus*, Gray.† I do not think that there is any other animal equally common throughout Kachh, as is this rat; it does of course not frequent stony and hilly ground, but is most abundant in the sandy districts between bushes, as well as between fields and on grassy plains; its barrows sometimes extent over hundreds of square feet without interruption. The size and colour of Kachh specimens perfectly tallies with Jerdon's description. Near habitations it usually comes out only in the morning and evening to feed, but far away from them it is to be seen out of its hole at all hours of the day. As a rule, it feeds, I believe, on roots of various herbaceous plants, and more rarely on seeds.

I hardly need to mention the occurrence of the brown rat (*Mus decumanus*) and of the common Indian mouse (*M. urbanus*).

Hystrix leucura is the common porcupine of the country; it is usually found on higher undulating desert ground, thinly covered with jungle, or on more elevated plateaus where brushwood occurs.

Lepus ruficaudatus is very abundant throughout Kachh. There is, (at least in younger specimens) a conspicuous white band from the nostril through the eye; the ears are lined internally with dull white, and externally towards the tips with blackish brown or black; the tail has in the young only a slight rufous tinge above.

Ungulata.

Equus onager, the wild ass, is entirely confined to the most uninhabitable and desert parts of the country near the Rann, or the Rann itself with its small islands. I have seen it on two or three occasions in crossing the Rann, but an approach to it even within half a mile was out of question.

Sus indicus is generally distributed, and fine sport may be had in suitable, temporarily swampy, localities, mostly near the Rann. Occasionally,

* Most naturalists accept for the Africo-Asiatic species the name *Meriones*.

† Comp. Jerdon, *Mamm.* Appendix, p. III.

I also met with solitary specimens, or small families of young, within the hills, as at Jora.

The common Indian antelope, *Antelope bezoartica*, is only found in the eastern parts of Kachh, towards Rájputána, while the Indian gazelle, *Gazella Bennetti*, occurs abundantly throughout the country. Jerdon (Ind. Mamm. p. 281) says that '*Gazella Christii*, Gray, from Sind and Kachh, is said to be paler, and with the horns more slender, and smaller than in the Indian gazelle, and with the tips abruptly bent inwards.' I have seen a great number of animals shot in different parts of Kachh, and preserved also a few skins, but they do not exhibit the least difference from the 'Chinkára' of Central and Northern India.

AVES.

In the subjoined list I have included only those species of which I procured specimens, and of the identity of which I had been able to satisfy myself. In addition to these I observed a small number of others, and although the identity of some of them appeared to me at that time tolerably certain, I shall note them separately; for with the number of very closely allied forms one cannot be cautious enough in avoiding mistakes in determination. Among the species which I have not procured are: *Astur palumbarius* which I saw on several occasions kept by falconers, but I could not obtain information that the specimens were procured in Kachh. At the beginning of November, I noticed on the Jora hills a solitary specimen of a *Centropus*, it was either *rufipennis* or *viridis*. Both, *Alauda gulgula* and *cristata*, do, I believe, occur, and I was under the impression that my shikari secured specimens, but on examination none were represented. *Carpodacus erythrinus* was seen on two occasions in January. I am also tolerably certain of the occurrence of *Tringa minuta*, *Numenius arquata*, *Herodias alba*, *Anas boschas*, *Mergus castor*, *Casarca rutila*, *Podiceps cristatus*, *Anser indicus* and *cinereus*; all these, besides a great number of other water-fowl, were seen on the large lake at Bhimsir near the Denodúr hill, and also S. W. of Barasir in the Charvar range. At the former locality I also observed one or two species of *Gallinula*, and a small *Porzana*. On two occasions I saw in the western part of Kachh what at the time I took for solitary specimens of *Ciconia alba*, and on one occasion a solitary *Cic. nigra*. When crossing the Rann from Kachh to Pacham early in November, I noticed several swans, but at too a great distance for it to be possible to form an idea as to the species the birds belonged to; a large *Cursorial* bird was also rather common, but I could not get a shot at him. It had the appearance of a gigantic *Chettusia*, being about double the size of *Ch. gregaria*, and somewhat similar in coloration.

2.* *OTOGYPS CALVUS*. Not common.

5. *GYPS BENGALENSIS*. Very common.

I examined several nests in the second half of December and in January; all contained only one egg. On the 11th January at Kunria, one nest had a nestling which must have been a week old.

6. *NEOPHRON GINGINIANUS*. Very common.

8. *FALCO PEREGRINUS*. Not common.

10. *F. JUGGER*. Very common.

During January, I have generally seen them in pairs, and on the 10th Feb., near the village Tappur in Eastern Kachh, a pair had a nearly finished nest on a large Kundú, near the edge of a tank. The bird is a great favourite with native Falconers.

12. *F. BABYLONICUS*.

Comp. Jerdon in *Ibis* for 1871, p. 240.

Only a single male specimen was seen and shot near Kantkote in Wag-gur district, on 12th January.

16. *HYPOTRIORCHIS (TURANTIA) CHICQUERA*.† Very common.

17. *TINUNCULUS ALAUDARIUS*. Common.

23. *MICRONISUS BADIUS*. Common.

I shot one male and two females in December and January, all had the iris bright yellow. *M.*—wing 7·5, tail 6, tarsus 1·8. *F.*—wing 8·6—8·9, tail 7·2—7·4, tarsus 2 inch.

24. *ACCIPITER NISUS*. Not common.

25. *A. (HIERASPIZA) VIRGATUS*. Not common.

29. *AQUILA BIFASCIATA*, Gray and Hardw. Not common.

Comp. Brooks in *Proc. Asiat. Soc. Beng.*, April, 1872, p. 65.

Jerdon says that *bifasciata*, Gray, is the same as *vittula* of Hodgson.

29. *A. FULVESCENS*. Very common.

45. *BUTEO FEROX*. Very common.

I have seen hundreds of these birds, all were of the *B. canescens* type, but not one of the uniform coloured type, called *fuliginosus* by Hume. The latter I got from Kotegurh near Simla. (Comp. Jerdon in *Ibis*, 1871, p. 338).

48. *POLIORNIS TEESA*. Common.

51. *CIRCUS PALLIDUS*, Sykes = *SWAINSONI*, Smith. Very common. Gray (*Handlist*, I, 37) gives Sykes's name the priority.

55. *HALIAETUS INDUS*.

Only seen near the sea shore.

* The numbers prefixed to the names correspond with those in Jerdon's 'Birds of India,' or their nearest allies.

† I would decidedly prefer adopting the subgeneric name *Turantia* for that of *Chiquera*, than altering the latter well known specific denomination to '*typus*.'

56. *MILVUS GOVINDA*. Very common.

The details in coloration are exactly as recorded of *govinda*, though they do not in any essential point appear to differ from those of *affinis* (Comp. Hume, Scrap-book, p. 320). Measurements of two specimens: wing 17·5 and 17; tail 10·6 and 11·25; tarsus 2·1, midtoe without claw 1·6 and 1·8, its claw straight 0·7 and 0·75; bill from gape 1·7 and 1·65 inch. This is as far as I saw, the only kite found throughout Kachh. A pair was breeding on a tree near Sumrasir on the 14th November.* Gray (Handl., I, 26) gives *melanotis*, Tem. and Schlegel, which was shewn by Blanford to be identical with *M. major* of Hume, as a synonym of *govinda*, but he places *affinis* of Gould in a distinct subgenus. *M. affinis* is added to the Indian fauna by Jerdon in Ibis for 1871, p. 343; but are these two races really specifically distinct?

67. *OTUS VULGARIS*. I have seen it only on three occasions.69. *BUBO (URRUA) BENGALENSIS*. Not uncommon in rocky ravines.76. *ATHENE BRAMA*. Very common.82. *HIRUNDO RUSTICA*. Common.

Wing 4·6; outer tail feathers 3·6, central 1·8; tarsus 0·4; midtoe and claw nearly 0·7 inch.

84. *H. (UROMITUS) FILIFERA*. Common.

This, Jerdon writes, 'must stand, it appears, as *H. ruficeps*, Lichtenstein,' but he thinks that the differences, said to exist between the Indian and African form, as pointed out by Mr. Gould, 'may perhaps still hold good.' Mr. Gould (Birds of Asia, Part xviii) says, that African examples differ by being smaller, by having a lesser amount of rufous on the top of the head, and a shorter tail. Now, these must be admitted to be very variable characters, in the Indian bird at least. I measured specimens with the wing varying from 4·4 to 4·8, and with the central tail-feathers from 1·3 to 1·6 inches long. The rufous on the head changes in Kachh specimens, (shot in winter), from deep rufous brown to a pale rusty.

85. *bis H. (LILLIA) ERYTROPYGIA*. Very common.

Wing 4·1 to 4·3, tail 2·8 to 3·3. True *daurica* occurs in the Satlej valley, where it is far from rare, and I also have a specimen of it from Western Bengal, shot by Mr. Ball during the winter of 1870; it is, therefore, not a restricted hill form. It differs not only in size, but also in the form of the bill, this being in *daurica* more contracted towards the tip and slightly longer.

90. *PTIONOPROGNE CONCOLOR*. Very common.

Wing 4 to 4·2, tail 1·9 to 2 inches, the central feathers from 0·1 to 0·2

* I have seen a pair of *govinda* copulating on 5th September, and before I left Calcutta on 10th October, they had their nest ready in front of my window.

inches, shorter than the outer ones. The species is very abundant and its favourite haunt are tanks or grassy slopes of hills.

91. *PTIONOPROGNE RUPESTRIS*. Not very common.

I saw the species repeatedly hunting over tanks, in company with *H. rustica*. The measurements are slightly smaller than those given by Jerdon.

112. *CAPRIMULGUS ASIATICUS*. Not common.

113. *C. MAHRATTENSIS*. Shot a single specimen on 26th January, at Daiselpur in Wagur district, between fields. The bird perfectly agrees with that described by Jerdon.

117. *MEROPS VIRIDIS*. Very common.

123. *CORACIAS INDICA*. Common.

129. *HALCYON SMYRNENSIS* (= *FUSCUS*). Common.

The largest specimen measures; wing 5, tail 3·5, bill at front 2·3, from gape 2·9 inch. (Comp. *Ibis*, 1872, p. 4.)

134. *ALCEDO BENGALENSIS*. Not common.

Wing 2·8, tail 1·3, bill at front 1·5, from gape 1·9, tarsus 0·35 inch.

136. *CERYLE EUDIS*. Common.

Wing 5·2 to 5·6; tail 2·75 to 3, bill at front 2·2 to 2·5, tarsus 0·4 inch.

Of two pairs shot the males are slightly larger than the females.

148. *PALEORNIS TORQUATUS*. Very common.

160. *PICUS (LEIOPICUS) MAHRATTENSIS*, var.

An idem *P. Blanfordi*, Blyth!

This is the only woodpecker which I have met with in Kachh. It would be difficult to identify it from Jerdon's account, and I give, therefore, a more complete description.

Forehead and part of top of head pale yellowish brown, with a more or less distinct golden lustre, (not pure yellow as Malherbe calls it); in the male occiput crimson, laterally extending to above the eyes, in the female dull yellowish brown, in both the occipital feathers are conspicuously lengthened; neck above with a broad uniform dark brown streak from the occiput downwards; lower neck, back and rump with longitudinal brownish black and white streaks, each feather being black along the centre; on the base of the lower tail coverts the white predominates, but of the longer tail coverts each has a large triangular central spot; tail blackish, each feather with 5 or 6 transverse, on the quill interrupted white bands; shorter wing coverts nearly uniform brownish black, longer coverts and all the wing feathers with along the middle of each feather interrupted bands, primaries dusky brown, and the white on them suffused with pale sulphur, secondaries and tertials much darker, particularly on the outer web. Lores, round the eye, about the angle of the mouth and chin in front fulvous white, ear coverts fulvous-ashy white or pale ash; sides of neck, chin and breast

in the middle almost pure white, a brown broadish band extends from behind and below the ear coverts to the sides of the breast; lower plumage and under tail coverts dull white with a brownish streak to each feather, a crimson patch on the middle of the abdomen; the white bands on the tail feathers are tinged with pure yellow, particularly towards the tips of the feathers. Bill plumbeous; feet blackish ashy. Wing 3·75 to 3·9; tail 2·3 to 2·4; bill at front 0·8 to 0·9, from gape 1· to 1·1; tarsus 0·6 inch; foot about 1·5. Fourth primary the longest, first 2·2 inch. shorter, second 0·4 and third 0·05 shorter than the fourth which exceeds the fifth by only a trifle.

These are the average measurements (from skins) of three males and two females; the former differ from the latter only by the crimson occiput, and sometimes also by a slightly smaller size, &c.

Not common, but occurring throughout Kachh, in the thinly wooded parts of the province, on trees as well as on *Euphorbia* bushes. It is a rather shy bird, and has a particular liking to hunt for insects towards dusk; I shot it often when it was almost dark, flatly clinging to the bark of a tree.

Looking at the comparative small size of the Kachh birds, I was at first inclined to separate them as a distinct species, but, on the suggestion of Mr. Hume, and after careful comparison, I am convinced that they represent nothing more than a local race of *Maharattensis*. I find that all the specimens of the latter from Bengal and Central India in the Museum have less white above, the white spots on the feathers being smaller, and that their 1st primary is a little shorter and narrower, being 0·8 inch. long, while in the Kachh variety it is usually broader and 0·9", or even 0·95" long. But in both it has three white spots on the inner web and one at the base of the outer web. The proportions between the other primaries agree in both. The bill in Central India *Maharattensis* is a little slenderer at the base and altogether somewhat longer. The wing, I find, to differ between 4 and 4·3 inches, but a specimen said to be from Simla has the wing only about 3·8 inch., and Beavan (Ibis, 1865, vol. I, p. 410) gives the wing of a female from Manblum as 3·88 inch.

Blyth's *P. Blanfordi* (Journ. A. S. B., XXXII, p. 75), 'is just barely separable as a race,' as its author truly remarks. I do not believe that it differs specifically; that is, I believe, that the Barmese bird is connected with true *P. Maharattensis* by intermediate forms of indefinable gradations. The type specimen has the wing 4, tail 2·45, tarsus 0·7, bill at front 0·9 inch. The white blotches on the upper plumage are again slightly larger than in the Kachh variety, but in all details of coloration both perfectly agree. The first primary is in the Barmese type only about 0·6 inches long, and the 2nd and 3rd are comparatively also a little shorter, but they do not appear to have attained their full size in that specimen. It is noteworthy

to observe that such a marked form of a wood-pecker, as *P. Maharattensis* represents, deviates from the type on the two extreme limits of its geographical distribution in an exactly similar manner, namely, by decreasing in size and adding more white to its plumage.*

214. *EUDYNAMYS HONORATA*, Linn.

M. orientalis apud Jerdon. Comp. Ibis for 1869, vol. v, p. 338 and for 1872, p. 15.

Rare during the cold and dry seasons, but said to be very common in the rains, when it breeds.

220. *TACCOCUA SIRKEE*.

Above dusky brownish grey with a slight greenish lustre, which is most distinct on the tail, tertials, secondaries and tail feathers with close duller crossbars, only perceptible in certain lights; top of head with a slight rufescent tinge; feathers on head and neck black-shafted, glistening, bristly in front, the remainder on the upper side brown shafted; lores and chin whitish, sometimes with a faint reddish tinge, above and below the eye narrowly white, bristles on eyelashes black, pure white at base; upper breast ashy very slightly tinged with ferruginous, lower breast, vent, sides, lower wing coverts and tibial feathers pale ferruginous; lower vent and lower tail coverts dusky ashy brown; outer tail feathers dark brown, broadly tipped with white. Average measurement of 3 specimens: Wing 6—6·25; tail 9 to 9·5; tarsus 1·6 to 1·7; bill from gape 1·5 inch., cherry red, yellow towards the tip and the upper mandible blackish at the side.

I have seen this bird only on a few occasions; it hides itself usually in *Euphorbia* bushes, and is most difficult to flush. Often it manages to run from one bush to another at a tremendously rapid pace, pressing its body to the ground like a rat. I have seen it feeding on insects on the ground.

* I take this opportunity of drawing attention to what appears to me to be often an *a priori* somewhat unnatural explanation of facts. When a naturalist has noticed and described a form which combines the characters of two well marked races, or species, and the geographical distribution of which falls within the limits of the two; other naturalists are, often without hesitation, ready with an explanation in stating, that the intermediate form is 'evidently a hybrid between the two.' This in many instances looks very plausible, but is it natural? or even *a priori* probable? These questions seem to me to require thorough study and examination. Why should we *a priori* presume that there exist two entirely distinct types? Does it not look more natural to assume *a priori* that the so called intermediate form within the geographical limit of a certain type is the typical species, and that, as it extends, it deviates in a somewhat different manner in various directions? and that the peculiarities acquired in order to maintain subsistence at certain localities may even remain constant and be inherited within those certain local limits?—I think in many cases this latter explanation will prove to be the more probable one, although I do not by any means wish to abandon altogether the former.

234. ARACHNECHTRA ASIATICA* = CURRUCARIA, Linn. Common.

On one occasion I shot a young male while sitting on the top of a tree, about 40 feet high, and engaged in occasionally darting after passing insects, which it appeared to catch, every time returning to its perch like a fly-catcher. In four males, wing 2·05 to 2·2 inches, tail 1·25 to 1·5; bill 0·65 to 0·7; tarsus 0·6.

255. UPUPA NIGRIPENNIS, Gould, vel *Ceylonensis*, Reich.

Comp. Jerdon, *Ibis*, 1872, p. 22.

Wing 5·3, tail 3·8, bill at front 1·75, tarsus 0·8 inch. The posterior feathers of the crest have distinctly white preceding the black tip, but the first primary has no white and the succeeding have it on both webs. The 4th primary is barely longer than the 5th, the 1st is 2·5 inches shorter than the 4th; the 2nd is 0·7 inches shorter, and the 3rd 0·1 shorter than the 4th. There is scarcely any ashy colour on the sides of the neck or breast.

Jerdon says, that the 'white spot on the first primary is occasionally present,' I may add, it is also the case as regards the white on the crest. What is then to remain to be the distinctive character between the present form and *epops*? I have great doubts about the Indian hoopoe being separable as a sufficiently distinct and definable species. There is no distinction in plumage, and the only difference I can see, in comparing about half a dozen specimens of each, is, that *nigripennis*, or *Ceylonensis*, is a smaller and lighter bird, with the first primary shorter and narrower. Still I cannot but doubt, that even these characters are so far constant, as to be of any use in defining distinct species. I am sure the European, Indian and even the Barmese hoopoe are merely local races of one species, not possessing a single character constantly distinct in one from the other.

I only saw few specimens at the end of October and in the beginning of November, but towards the end of the latter month, they became more numerous; it is, however, not a very common bird in Kachh, and must be, to a certain extent at least, migratory.

256. LANIUS (COLLYRIO†) LAHTORA. Very common.

Wing 4·1 to 4·4, tail 4·4 to 5; bill at front 0·6 to 0·7; tarsus 1·1 to 1·3 inch.

Some specimens have a distinct white superciliary edge above the black, others no trace of it; the inner plumage on breast and vent sometimes has a very slight creamy wash, exactly as is often the case in the European

* I do not see the benefit of changing the name *asiatica* to that of *currucaria* as suggested by Jerdon, both being Linne's names. The former is retained by G. R. Gray in his Hand-list.

† G. R. Gray adopts *Collyrio*, Moehr., 1752, for the group of *Lanius excubitor*, reserving Linne's name *Lanius* for the type of *L. cristatus*.

excubitor; all the tail feathers have at least their extreme tips white, even the central ones, but only visible after a fresh moult, (which is also the case in the two next species).

A full account of this species will be found in Proc. Zool. Soc. London, for 1870, p. 595, by Mr. Dresser. On p. 596 the author says, 'rump and upper tail coverts white,' the description being taken from an old Pan-jáb bird. Now, it is strange that in about a dozen of specimens which I shot in Kachh, and some of which are decidedly very old birds in full plumage, the rump and upper tail coverts are albescent grey, in some the latter may be called greyish white, but that is the utmost limit of white. In fresh moulted old specimens the extreme terminal edges, of the upper tail coverts are blackish, but they appear very soon to wear off. Perhaps the distinction of possessing the rump and upper tail coverts white applies to the winter plumage, which I do not know.

257. *L. ERITHRONOTUS*. Rare.

260. *L. VITTATUS** (= *Hardwickii*, auctorum). Very common.

262. *L. ARENARIUS*† Rare.

Bill at front 0·42 to 0·45, wing 3·5 to 3·6; tail 3·3 to 3·45, tarsus 0·9. These measurements are somewhat smaller than those generally given of the species. The young is striped in the usual way on the sides of neck and of the body, and on the chest. The light coloured band on the rectrices, such as is noticed by Viscount Walden in *Ibis*, vol. III, p. 224, is only occasionally present, perhaps in old birds. The species migrates during the summer to Western Tibet, where I saw it in the Indus valley.

265. *TEPHRODORNIS PONDICERIANA*. Not common.

The wing varies (in four specimens shot) between 3·3 and 3·4, none is 3·5 inch. The two outer tail feathers on each side are white, except at the base and towards the tip, there being only the sub-terminal outer, or both webs dusky; the 3rd and 4th last tail feather on each side generally have also a white edge about the middle of the outer web.

276. *PERICROCOTUS PEREGRINUS*. Very common.

The orange wing patch does not extend on any of the outer webs of the first 5 primaries. Wing 2·5 to 2·6, tail 2·7 to 3; tarsus 0·6 inch. (not $\frac{9}{10}$).

277. *PERICROCOTUS ERYTHROPYGIUS*. Not common.

I have occasionally seen flocks of this species hunting over high grass on dried up portions of tanks. In the jungles it is more often seen single, or in pairs.

* *Ibis*, 1868, iv, 316.

† Comp also Jerdon in *Ibis*, 1872, p. 115.

278. *DICRURUS** *ALBIRICTUS*, Hodgs. Very common.

Average of four specimens, young and old: bill 0·7 to 0·8; wing 5·4 to 5·65; tail 5·8 to 6·4, tarsus 0·8 inch.

I have never seen a herd of either cattle, or sheep, or goats, without a number of these birds accompanying it; they start with the herd in the morning and return with it in the evening.

The specific name *macrocerus* is restricted for the Java species.

292. *LEUCOCERCA AUREOLA*, Less. = *albofrontata*, Frank. Very rare.

361. *PETROCOSYPHUS CYANEUS*. Rare.

365. *PLANESTICUS ATROGULARIS*. Rare.

(Comp. Journ. A. S. B., 1868, vol. xxxvii, Pt. II, p. 35.)

Bill at front 0·6 to 0·7; wing 5·3 to 5·4; tail 4 to 4·1, tarsus 1·25.

385. *PYCTORIS SINENSIS*. Very rare.

Bill 0·43; wing 2·55; tail 3·7; tarsus 1 inch.

438. *CHATORHEA CAUDATA*. Extremely common.

459. *OTOCAMPSA LEUCOTIS*. Very common.

Wing 3·1 to 3·4; tail 3·2 to 3·5; tarsus 0·75 to 0·8 inch.

462. *PYCNONOTUS CHRYSORRHODES*, Lafr. = *pusillus et pseudocafer*, Blyth. Very common.

467. *IORA ZEYLANICA*. Very common in low tree jungle.

Size the same as that given by Jerdon. Males and females had exactly the same colouring, during the winter, but *no black* above, the hind head and back are, however, in most specimens blackish green. In this stage they appear only to differ from *typhia* by their triflingly smaller size. (Compare Hume, Jour. A. S. B., vol. xxxix, pl. ii, p. 117, and Stoliczka, *ibid*, p. 310).

480. *THAMNOBIA CAMBAYENSIS*.

(Comp. Journ. A. S. B., 1868, vol. xxxvii, Pt. II, p. 40.)

Extremely common throughout the country. The size is exactly the same as that of the southern form, known under the name *fulicata* in India. Male specimens which I shot in February had the upper plumage decidedly rather darker, in fact almost black, tinged with blackish brown, while specimens which I shot in November and December are almost entirely brown above, but the upper tail coverts are in all greenish glossy black. It seems to me clear that the two forms, as presently distinguished, merely represent seasonal or local faces of the one and same species.

I observe that Gray (Hand-list, I, p. 211) unites them under the name *Cambayensis*, reserving the name *fulicata*, Lath., for a South African species.

* This generic name is retained by G. R. Gray, and *Bhuchanga* of Hodgson considered as a synonym of it; but if the birds of the type of *D. longirostratus* should at all be distinguished in a separate group from those of the type of *D. fuscatus*, Gm., Hodgson's name should be retained as a subgenus for them, though I almost doubt that a real necessity exists for it.

481. *PRATINCOLA CAPRATA*. Very rare.

483. *P. INDICA*, ? = *RUBICOLA*. Very common.

Comp. *Ibis*, 1870, vi, p. 167, and 1871, p. 27.

♀ Wing 2·65, tail 2, tarsus 0·85, bill at front 0·4 inch.

This is the only specimen I saw during the whole winter; I shot it near Bhúj on 2nd January. Gray (Hand-list, 1, 228) retains the Indian Bush-chat as distinct from the European, but I still think their identity can hardly be questioned, although Indian specimens may generally be smaller; I certainly disbelieve the existence of two separable species in India as *rubicola* and *indica*. As far as I remember I have seen in 1867 European specimens with all the distinctive peculiarities in colour of *P. indica*, Himalayan specimens of which I then compared with the former.

483bis. *PRATINCOLA MACRORHYNCHA*, n. sp.

I shot at the beginning of 1872 two specimens of a *Pratincola*, (probably females, the sex was unfortunately not determined), which appears to be distinct from any other as yet known.

General plumage, above, dull brown, all the feathers margined with pale isabelline or fulvescent whitish, most broadly on scapulars and tertials, narrowly on the quills; upper tail coverts nearly entirely uniform pale fulvescent or sandy, only along the centre of a darker hue. Central tail feathers brown, the succeeding also brown and very pale rufescent fulvous about the basal half of both webs, (not along the shafts), the rufescent colour gradually, not abruptly, passing into the brown; outer web of last tail feather wholly sandy or pale fulvescent white, and all have pale tips which, however, easily wear off. Lores and supercilium sandy white; ears dusky. Lower plumage fulvescent white throughout, with a slight shade of cream colour, all the feathers on their basal halves are dark slaty, which is also the case on the upper plumage. Bill and feet nearly quite black. Total length about 5·2" to 5·5"; wing 2·85" to 2·9 inch., first primary nearly 1", and 1·2" shorter than the second, which is very nearly equal to the 6th and 0·24" shorter than the fourth, this being the longest; the 3rd and 5th are subequal and very little shorter than the fourth; tail 2·1 to 2·25, tarsus 0·95 to 0·97; bill at front 0·48 to 0·5, from gape 0·72; hind toe and claw 0·57, hind claw alone 0·3; mid toe with claw 0·72 to 0·73 inch. The size of the bill, which is rather narrow and Saxicoline, and the length of the legs readily distinguish this apparently new species; it is not the female of *P. rubetra*, this having the basal half of the tail white, and the bill shorter and broad at the base. It is also not a female or young of *P. caprata*, moreover the length and slenderness of the hind claw does not agree with any *Pratincola*, nor even with *Saxicola*, but strange enough with *Oreicola* (= *Rhodophila*).

One of the two specimens was shot in January near Rápúr in the Wagur district, and the other in February near Bhúj, in both cases in an open desert country with scanty low bushes. These were the only two specimens, which I saw, but possibly the bird may not be so very rare; for I could never pay undivided attention to an ornithological subject.

489. *SAXICOLA PICATA.*

Comp. Hume, in *Ibis*, 1870, vi, p. 283.

Wing 3·6 to 3·75, tail 2·5 to 2·8; tarsus 0·9 to 0·95; bill 0·4 to 0·5. The female has exactly the same distribution of the colours as the male, but the black is replaced by blackish grey, the chin is rather whitish grey and the ear-coverts somewhat rufescent.

One full plumaged male has an indistinct white stripe above the lores, and all the tail feathers are distinctly tipped white, the black being subterminal. Some apparently younger males with a dusky black plumage have the forehead paler, but none shews the very marked creamy colour noticed in Gould's *capistrata*, which was shown by Hume to be a young male of *picata*.

491. *S. ISABELLINA*, Rüppel, (= *saltatrix*, Menét.). Rare.

Comp. v. Pelzeln in *Journ. für Ornithologie für* 1868, p. 27.

Wing 3·75, tail 2·3, tarsus 1·17, bill at front 0·57. A specimen from the the Somáli country, determined as *isabellina* by Blyth in the Asiatic Society's collection (now Indian Museum), only differs in having the wing about 0·2 inch longer, (comp. Tristram's statement in *Ibis*, 1867, p. 94); both have the blackish streak between the base of the bill and the eye, and the plumage is in every detail the same.

491bis. *S. KINGI*, Hume. (*Ibis*, 1871, p. 29).

A single specimen was shot in Wagur in January, and I do not remember of having seen another. Wing 3·55, tail 2·3, tarsus 1; bill at front 0·56 inch. The first primary is 1·75 shorter than the 3rd. The coloration exactly agrees with the specimen described by Mr. Hume, who kindly pointed out to me the bird amongst a number of females of the next species.

492. *S. DESERTI*, Rüppel, = *atroglaris* and *montana*, Gould.

Very common. The wing of five males varies between 3·6 and 3·9, tail 2·5 to 2·7, tarsus 0·95 to 1·05, bill 0·45 to 0·5 inch. Most of the females are a trifle smaller (wing 3·5 inch.), than the males.

I have no doubt that Mr. Hume is correct (*Ibis*, 1870, vi, p. 283) in considering Gould's *S. montana* as the summer or breeding plumage of *atroglaris*. In *Journ. As. Soc.*, 1868, xxxvii, Pt. II, p. 42, I have particularly noticed the pure white on the median portions of the wing feathers on Tibetan specimens, shot during the summer, and regarding which von Pelzeln (*Ibis*, iv, p. 308) says that they agree with an Egyptian specimen of *S. deserti*, except that the latter is smaller.

I perfectly remember African specimens of *S. deserti* which I repeatedly compared in 1867; they were no doubt on the whole a little smaller (on the average, I find in a note: wing 3·5, tail 2·5, bill at front 0·45, tarsus 0·95), than most of Indian specimens, but there was not the least difference in structure and colour between the two. Now, as Indian specimens occasionally equal in size African ones, and as the former, which undoubtedly represent one species, differ in the size of the wing from 3·5 to 4 inches, I do not see,—with all respect due to the opinions of Messrs. Gould, Blyth and other eminent ornithologists—any reason in regarding the Indian birds as specifically distinct from the African *deserti*. All we can say is, that African specimens are as a rule lighter and smaller, while Indian specimens are as a rule slightly heavier and larger, but I do assert that there are to be found specimens perfectly equal in size from both countries.

494. *CERCOMELA FUSCA.*

I have only seen solitary specimens in the hilly districts, between low bushes. The birds have much of the habit of a *Petrocoscyphus*.

497. *RUTICILLA RUFIVENTRIS.*

This is the only redstart which has been observed; it was tolerably abundant from November until the end of February.

I shot 3 males and two females, and the measurements of all are considerably smaller than those given by Jerdon: ♂, wing 3·2 to 3·3; tail 2·4 to 2·6, tarsus 0·9, bill at front 0·4 inch. The females are a little smaller.

530. *ORTHOTOMUS LONGICAUDUS.* Common.

Lores and eyelids white. Tibial feathers pale rufous. I shot a specimen while hunting for insects between large stones of an old embankment at the Sir-talao in the south-western part of Kachh. It looked in every crevice or hole, disappearing and emerging again from among the stones, just like a wren. Other specimens I often saw hunting on the ground in *Euphorbia* bushes.

536. *PRINIA GRACILIS.* Not common.

Lores extending on the supraciliary edge white, tibial feathers pale rufous.

544*bis.* *DRYMOIPIUS JERDONI*, (Blyth).

P. ? n. sp., Journ. A. S. B., xi, p. 883 and xiii, 376.

P. Jerdoni, Blyth, J. A. S. B., xvi, p. 459.

Upper plumage entirely, and more or less distinctly, rufescent brown; margins of wing coverts, tertials and upper tail coverts slightly more tinged with rufescent, primaries on the edges of the outer webs pale rufescent; shoulder edge of wing, lower wing coverts and all wing feathers about the edges of the inner webs (not quite extending to the tip) rufescent whitish. Lores, supercilium and round the eye white; ear coverts white at the base,

greyish towards the tips, the grey colour also tinging the sides of neck. Lower plumage very soft, luteo-rufescent whitish, white on chin and abdomen; thigh coverts and lower tail coverts pale rufous. Tail above with rather close, but not very distinct, dull cross bars, all except the two centre feathers with an indistinct subterminal dark band and a well developed dull white tip. Bill above dark brown, paler towards the edges and below; feet pale fleshy.

Length about 7 inches; wing 2.05 to 2.20; tail 2.75; tarsus 0.75; bill at front 0.42, from gape 0.62 inch. (These measurements are taken from two carbolised specimens.)

This is undoubtedly the bird which Blyth first noticed as distinct from *D. sylvaticus*, naming it subsequently *D. Jerdoni*, but uniting it afterwards with *D. longicaudatus*. Jerdon (Birds, India, II, p. 180) doubts the correctness of this identification, and very properly so, I think. I have carefully compared the type specimen, presented by Jerdon, and I have no doubt that it is a distinct and good species. The type measures: wing 2.1, tail 2.6, tarsus 0.72 inch., (bill imperfect). This type specimen exactly agrees in plumage with those from Kachh, and there is another specimen received since by the Indian Museum from Nagpúr, very likely presented by W. T. Blanford. It is also exactly of the same size, as the type.

I found the species not unfrequently between low bushes, but secured only two specimens, which I prepared with carbolic acid. Mr. Hume kindly informed me that he named the bird *Drymoipus rufescens*, noting the distinctions from allied Indian species.*

544. *DRYMOIPUS LONGICAUDATUS*.

In two specimens shot on 26th December, the primaries are edged with very pale rufous. There is no dark subterminal band on the tail, but all except the middle feathers pass into albescent towards the tips, which are conspicuously narrowed in one specimen. Lores, supercilium and round the eye white. The two specimens were procured in moderately high grass at the edge of a tank near the village Wandra, in the S. Western part of Kachh. Wing 2.85 and 2.95; tail 2.4 and 2.8; tarsus 0.75, bill at front 0.42 inch..

551. *FRANKLINIA BUCHANANI*? (an *Cleghornia* Jerdon).

Out of three specimens shot in November and December, in one the upper coloration is rufescent brown and the head above almost quite rufous

* Since my account was written, Mr. Hume's description of the bird appeared in 'Ibis,' vol. ii, No. 6, for 1872, p. 110. A full account of the bird will be found in that place. Mr. Hume gives the wing of a male as 2.62 inches, and the tail 3.38, tarsus 0.95, and bill at front 0.5 inch. Other specimens are smaller, particularly the young, and the females, he says, are always much smaller than the males. (Sept. 1872.)

with paler shafts to the feathers; a second specimen is paler, being slightly olivaceous brown. Wings dull brown, primaries edged with olivaceous white, secondaries with pale rufescent; edge of wing white; middle tail feathers very conspicuously cross barred, the others dark or blackish brown with white tips, the outer edge of the outermost feather is wholly white. Lores, round the eye and the lower plumage white; ear-coverts whitish, tinged with pale ashy towards their tips; sides of neck and breast tinged with bluish ashy; sides of belly, the abdomen and lower wing coverts, with fulvescent, and the tibial feathers are slightly rufescent. Bill brown, basal half of lower mandible whitish; legs fleshy, darker on the toes. Wing 2.05 to 2.1; tail 2.5 to 2.6; tarsus 0.7; bill at front 0.42 inch.

In the third specimen the upper plumage is still paler than in the other two, ashy brownish, and the rufescent on the head very slight; in other respects it is exactly the same. Wing 1.95; tail 2.45 inch, bill and tarsus the same, as in the two previous specimens. The more ashy and little smaller bird is probably the female or young, but I had not determined the sexes.

The birds were very abundant, flying from bush to bush, almost invariably in company with *Chatorhea caudata*, and feeding mostly on the ground between the bushes.

Should this bird be Jerdon's *F. Cleghornia*? (Comp. Ibis, 1867, p. 24). It is a trifle smaller than Jerdon's measurements of *Buchanani*, but I can see no very perceptible distinctions between specimens of that bird in the Museum and those from Kachh. Gray gives *F. Cleghornia*, in Handlist, Pt. I, p. 196, as a distinct species, and Blyth says that it differs from *Buchanani* by 'having the upper parts pale rufescent brown.' I dare say a good series of the birds from the N. West Provinces will easily settle this question, but several specimens of *Buchanani*, which I saw from the North-West, are paler than the Kachh birds.

553. *PHYLLOPNEUSTE RAMA*, (apud Jerdon). Not common.

In all birds which I observed, and which are referable to this species, [as distinguished from the smaller *Calomodyta* (?) *Iduna agricolensis*, Hume], the first primary was about 0.7 inch. long, but in some birds the third is equal to the fourth, in others the fourth is a trifle longer than the third primary, there is, however, no possibility of distinguishing the birds either by plumage or size. The roundness of the ridge of the bill towards its tip also slightly varies. Wing 2.4; tail 2 to 2.15; tarsus 0.75 to 0.77; bill at front 0.4.

This species is referred to by Gray (Handlist, I, p. 209) as a synonym of *Calamodyta (Iduna) calligata*, Licht., a Siberian and Eastern European species. The identification is very probably correct.

554. *PHYLLOSCOPUS TRISTIS*. Not common.

Wing 2.4; tail nearly 1.9, tarsus 0.75; bill at front 0.33, from nostril

0·25; from gape 0·48. Although this specimen slightly differs in size from others, as usually recorded, and although its upper plumage has a decided greenish tinge, it agrees in every other respect with the Indian *tristis*, and not with the European *rufus*; but the difference can scarcely be made out without well preserved examples of the latter species, such as I had occasion to see in Mr. Brooks' collection. Slightly faded specimens of *rufus* are scarcely distinguishable from *tristis*, but I doubt that many specimens of the latter occur without a trace of green tinge in the upper plumage, as represented in Gould's figure in 'Birds of Asia.'

581. SYLVIA (ADOPHANEUS) ORPHEA. Rather rare.

The measurements of two ♂ specimens perfectly accord with those given by Jerdon. Top of head black in both. The outer tail feathers are nearly all white on the outer webs, and also on about the terminal (not basal) half of the inner web.

Gray (Hand-list, I, 214) retains for the Indian species Blyth's name *S. Jerdoni*, as distinct from true *orphea* of Europe, Africa and Palestine. But what are the definable distinctions between these two?

583. SYLVIA (STERPAROLA) CURRUCA. Very common.

Average measurements of four specimens: wing 2·5 to 2·65; tail 2·25; tarsus 0·75 to 0·8; middle toe with claw 0·6 to 0·7; bill 0·36 inch. Comparing these measurements with those of Jerdon, the bill and tarsus are exactly as in *curruca*, but the wing and tail are very nearly as large as in the South Indian *S. affinis*,* and as Blyth says (Ibis, 1867, p. 28) that the latter only differs from the former by a somewhat larger size, and not in plumage, it is, I think, after all not improbable that they represent only one species with slight variations in the size. The amount of white and its purity on the outer tail feathers varies: the latter are nearly all white, or with the basal half of the inner web dusky, and again in others the inner web is nearly to the tip dusky, but the shaft is always black. The white is pure in some birds, but certainly less so in others. The second last tail feathers are generally tipped white, but not invariably. Tristram gives as a 'constant distinction' between the Indian and the European birds, 'the outer tail feathers are nearly all pure white, and the others tipped with pure white' in the former, but these are most decidedly very variable characters, as far as the purity of the white is concerned. Gray (Hand-list, I, 213) does not allow *curruca* in India, but only *affinis*; and Brooks (J. A. S. B., XLI, Pt. II, 1872, p. 81) seems to have no doubt on that point. Before accepting this decision, I should like to see the differences pointed out which exist between *affinis* of all India and *curruca* of Europe

* One of the two original types in the old Asiatic Society's collection has the wing 2·7, and the other 2·75, the bill is slightly larger than in any *curruca* I saw from Northern or Central India.

and Palestine. I can only say that it appears to me far more probable, that all are *curruca*, than that the Northern Indian bird is specifically separable from the European.

589. *MOTACILLA MADERASPATENSIS*, Gm. Not common.

Wing 3·6 to 3·7; tail 3·9; tarsus 1; bill 0·6. These measurements are somewhat smaller than those given by Jerdon, but the coloration agrees perfectly. A male and female, which I shot on 24th October, had the chin and throat still black, with only very few white feathers intermixed.

591. *MOTACILLA DUKHUNENSIS*. Common.

♂ wing 3·6; tail 3·75; tarsus 0·95; bill at front 0·5.

♀ " 3·3, " 3·5; " 0·9; " " 0·5.

These are the measurements of a pair which I shot together on 31st January at Rápúr in the Wagur district. The female is slightly smaller than the male; it has the ashy above and the black on the wings, on the tail and on the gorget, less pure, and the head above and nape are uniform with the upper plumage, *i. e.*, grey. The white on the forehead is of less extent and less pure. Jerdon's description of *Luzoniensis* is so general that it could equally apply to the present species, which has the white band at the side of neck continuous.

593*bis*. *BUDYTES MELANOCEPHALA*.

There were few of these birds seen before the end of December. Of several which I obtained, none has a trace of a white or yellow supercilium. Specimens shot in January had the top of head partially brownish grey, some of the feathers, however, changing to black. Chin whitish in front and the breast with some dark spots. About the middle of February I saw a great number of these birds with the underparts very bright yellow, and the top of the head perfectly black.

Wing 3·2, tail 2·75 to 2·9, tarsus 0·85 to 0·95; bill 0·15 to 0·5 inch.

Mr. Brooks has kindly shewn me his series of Indian and European *B. flava*, *cinerocapilla* and *melanocephala*, and I can only say that the male adult birds of these species are very well marked and easily distinguished, whatever difficulty there may exist in discriminating young and female birds, or those not in full plumage.

(Comp. Notes on *B. flava* and its varieties, in Ibis, 1871, p. 138, and Brooks in J. A. S. B., XLI, Pt. II, 1872, p. 82).

594*bis*. *BUDYTES CALCARATUS*, Hodgs. Rare.

A specimen shot on 2nd January near Bhúj agrees in colour with Jerdon's account of *B. citreola*; the back begins to change from grey to black, which latter colour, according to Brooks, distinguishes *calcaratus* from *citreola*; the former also has a slightly larger bill and tarsus. The measurements are: wing 3·25, tail 3, bill at front 0·55, tarsus 0·96, hind claw 0·4 inch.

602. *AGRODROMA CAMPESTRIS*. Common.

616. *PARUS NUCHALIS*.

I shot two specimens during December in the Western part of Kachh, and I saw a few more at various other localities, but the species is decidedly rare. It frequents low jungles, thin and thorny, such as they are in Kachh.

Above, glossy black, somewhat duller on back and tail; nuchal patch, a band about the middle of the wing, extending only to the basal portion of the inner web of the second primary, the extreme tips of all wing feathers, the greater part of the margins of the outer webs of the three or four last primaries, a narrow subterminal outer edge of three or four last secondaries, the broad outer margins, also involving the tips of the tertials, the first outer tail feather entirely, the second nearly so (except on shaft and on the edge of inner web), the outer web of the third last, and the tips of all the succeeding feathers, (decreasing to the centre one), white. A broad black band from the lower mandible along the centre of the underside to the abdomen, broadest in front and on breast. Sides from the angle of the mouth to the lower tail coverts including white, on the side of breast, the belly and abdomen, tinged with very pale but distinctly fulvous green. Tibial feathers white in front, black behind; some of the longest lower tail coverts are blackish at the base of the inner web, the remainder all white. Wing 2.7 to 2.75, tail 2.1 to 2.25; tarsus 0.65; bill at front 0.35. Bill black; legs plumbeous, very stout.

This is probably the most northern part of the country in which the species occurs. The two specimens above described slightly differ in size and coloration from Jerdon's description and figure of a South Indian example, but both evidently are the same species.

663. *CORVUS (ANOMALOCORAX) IMPUDICUS*, Hodgs.

This name is adopted by G. R. Gray (Handl., II, 14) for the Indian crow, *C. splendens*, Tem., being referred to Java and Sumatra. It is the only representant of the *Corvidæ*, but is very common throughout Kachh.

684. *ACRIDOTHERES TRISTIS*. Very common.

In several places I saw this species associating at dusk in great numbers near tanks where there was high grass growing, and at night fall they disappeared under a tremendous noise like shooting stars in the arundinaceous forest, with the peculiar rapid turn in their flight, exactly as *Sturnus vulgaris* does in Europe.

The entire plumage is much duller in winter than in summer, and is exactly like that of *A. fuscus*. The first primary is minute and the fourth the longest. In one specimen, the second primary is entirely white, and some of the first tertials are also white. This is evidently an accidental

variation in the plumage, perhaps the first step to albinism. The wing varies in four specimens from 5·5 to 5·9; tail 3·5 to 3·75; tarsus 1·4 to 1·6; bill at front 0·65 to 0·7 inch.

685. *ACRIDOTHERES GINGINIANUS.*

Not very common, except locally in the eastern parts of Kachh (Wagur district). In young specimens from Bengal the bill is blackish green at base, the wing spot pure white and the under tail coverts and tips of tail feathers dusky white, instead of pale ferruginous.

In addition to the three species, given by Jerdon, G. R. Gray (Handl., II, 20) separates *A. grandis*, Hodgs. = *cristatellus*, Vig., from Nepal, and *? ater*, V., = *griseus*, Blyth (part), from Pondicherry.

687. *TEMENUCHUS PAGODARUM.*

Rare. I have seen it only on three or four occasions in pairs. Jerdon's description is rather short. It should state that the lengthened brown feathers pass round the whole neck. The two middle tail feathers are ashy brown, and blackish along the shafts, the remainder dark brown, tipped with white, the latter colour increasing in amount towards the outer feathers; lower tail and under coverts of the wings white, tibial feathers ashy white; there is a small black spot at the base of the lower mandible, and the chin quite in front is also tinged blackish.

690. *PASTOR ROSEUS.*

Very common from about the middle of November. G. R. Gray (Handl. II, 19) quotes the Indian bird as distinct from the European and Western Asiatic under the name *P. ? peguanus*, Less. I do not know whether a second species exists in Barma, but surely the Western Indian bird is not different from the European one, which in former years I had very abundantly seen in various parts of Hungary. It is a rare bird in Western Europe.

694. *PLOCEUS BAYA.*

This is the smaller bird,* described by Jerdon under the above name. Although nests were very numerous seen on branches overhanging river banks &c., the birds themselves were very rare; most of them must have retired to some other more wooded districts, but they are said to return in the rainy season, when they breed.

703. *MUNIA MALABARICA.*

Extremely common. I found the species breeding abundantly during November, December and January in deserted nests of the weaver bird, *P. baya*; and I was told by my shikari that the *Munia* never builds its own nest, always using that of *baya*, as soon as the latter had finished breeding at the end of the rains. However, I have at least on two occasions seen a *Munia* working on an imperfect nest of the *P. baya*, evidently the birds

* Comp. ante, p. 167.

were repairing it. There certainly were other apparently finished nests with eggs in them, their bases were rather flat, irregular and the entrances were lateral; these looked to me as nests repaired by *Munia*. I found from 6 to 12 eggs in one of them; more than one pair appeared to lay in the same nest, or rather the birds did not seem to be very particular in which nest they lay; they appear to be very communistic in this respect. The eggs are white, varying in shape from elongately oval to almost globular. The former is the prevalent type, averaging in size about 16 by 12 (changing to 11 and 13) mm.; one of the extreme forms of the globular type measures 19 by 17 mm.

706. *PASSER INDICUS*. Very common.

I have seen the wing of this species in India vary from 2.75 to 3.25 inch. I wonder, if really good series of the European and the Asiatic sparrows were made, whether it would be possible to define in words the distinction between *indicus* and *domesticus*; I doubt it.

711. *FRINGILLA (GYMNORIS) FLAVICOLLIS*. Common.

The bill of this species certainly more resembles *Fringilla* than *Passer*, and so does the habit, the call, and the general tone of plumage of the bird.

714bis. *FRINGILLARIA* STRIOLATA*.

Comp. Hume in Ibis, 1870, vi, p. 399.

Local and usually seen in pairs, between low bushes on slightly elevated or hilly ground.

♂ wing 3.1; tail 2.35; tarsus 0.63; bill at front 0.36 inch.

♀ " 3; " 2.3; " " ; " " " " " "

This bird was only lately added to the Indian fauna by Mr. Hume. Kachh specimens perfectly agree with Mr. Hume's account.

716. *CITRINELLA† (GLYCOSPINA) HUTTONI*. Very common.

Males have the head lighter ashy than females; and in both sexes the feathers on top of it are slightly darkened along the middle line. The males are also more rufous below, having a broad patch of that colour on the breast. A dark streak from the base of the lower mandible on each side is well marked in both sexes, and the pale mandibular streak has a slight yellowish rufescent tinge. I cannot help doubting the specific distinctness of this bird from *hortulana*, as far as I remember the European bird. The note of both is exactly the same.

756. *MIRAFRA ERYTHROPTERA*. Not common.

I shot once a specimen sitting on a bush about 5 feet high, and pouring forth a rather pleasing song.

* The species of this genus are almost entirely African, the present species appears to be the most eastern straggler.

† The generic name *Emberiza* has been restricted for the type *E. caudalis*, L., therefore nearly all Indian *Emberizinae* are referable to *Citrinella*.

758. *AMMOMANES PHENICURA*. Common.

Wing 4 to 4·3; tail 2·3 to 2·5; tarsus 0·8 to 0·86 and bill 0·5.*

760. *PYRRHULAUDA GRISEA*. Common.

Gray (Handl. II, 123) gives *affinis*, Blyth, as a distinct species from 'Madras.'

761. *ALAUDA (CALANDRELLA) BRACHYDACTYLA*. Common.

Wing in three specimens only 3·6 to 3·7 inch, tarsus 0·75 to 0·8.

765. *ALAUDA (SPIZALAUDA) DEVA*. Very common.

The measurements agree with those given by Jerdon, the length of the wing only varying between 3·3 and 3·4 inch. Mr. Hume (Journal A. S. B. xxxix, pt. ii, p. 120) separated a very closely allied and slightly smaller form as *Sp. similina*. The length of the wing of the Kachh lark is intermediate between his measurements (loc. cit.) of the two forms; and so also appears to be the general tone of the plumage, not being either particularly rufous, nor pale or sandy colour. The lining of the wing is slightly tinged with rufous in a young, but is of a purely fawn or sandy in two adults. The male has the hind toe and claw 0·8, the female 0·7, the former has also the feathers of the crest somewhat longer than the latter.

770. *ORTHYLAUDA (ALEMON) DESERTORUM*.

Wing 5·1 to 5·3 inch. Jerdon does not mention the dark mustachial streak which is always well marked. All my specimens have the upper plumage brownish sandy-grey, exactly like those obtained by Mr. Blanford in Abyssinia, while Jerdon noticed an Indian example with dark plumage, probably resembling Gould's figure in Birds of Europe. They are evidently the same birds. (Comp. Blanford, Geol. and Zool. Abyssinia, 1870, p. 355). Gray (Handlist, II, 121) gives Finsch's *Jessii* as distinct from *desertorum*, although their identity has been, I believe, unquestionably proved by Finsch himself (vide Append. II, to that author's Report on birds from Abyssinia, &c., p. 316).

I have obtained this desert lark only on the Rann, between the mainland of Kachh and the islands of Pacham, Kharir, &c., but even in these true desert localities it seems to be rare; for I have not seen more than a dozen examples altogether; generally two of them in society were seen busily hunting after grain on the soft, muddy track, leading through the Rann.

788. *COLUMBA INTERMEDIA*. Very common.

There is scarcely a well in Kachh in which a colony of these pigeons would not breed, and they appear to do this all the year round, as if domesticated.

794. *TURTUR CAMBAYENSIS*. Very common.

796. „ *BISORIUS*. Very common.

* The numbers referring to these two last measurements are evidently transposed in Jerdon's book, loc. cit. p. 422.

797. *TURTUR HUMILIS*. Common.

799. *PTEROCLES ARENARIUS*.

This is by no means a common bird in Kachh. I only met with it in the south-eastern parts of the province on large grassy plains or fields.

800. *PTEROCLES FASCIATUS*. Very common.

The crepuscular habit of this bird must be explained by its coming to drink at, or little after, dusk. Hundreds of them used to arrive, under a loud chuckling call, to the wells or tanks where I was usually encamped. After they had satisfied their thirst they generally walked away quietly and remained for the night in the neighbouring fields, although they were often constantly alarmed by other animals who came to the wells during the night. When flushed for the first time in the jungles during the day, they generally take only a short flight and drop down again, but when flushed a second time they betake themselves a much greater distance. On the 22nd December, I came across a couple of old birds with 3 young ones, only about one or two days hatched. This must have been exceptional, as the usual breeding season of these birds is much earlier, during the rains.

802. *PTEROCLES EXUSTUS*. Very common.

Comp. Journ. A. S. B. xxxviii, pt. ii, p. 189.

In many females the central rectrices are quite as much elongated as in the males, at least during the winter. A young male shot in November is coloured above like the female, but the chin is whitish, the pectoral band altogether absent, and the sides of the abdomen are nearly as rufous brown, as in the adult male.

803. *PAVO CRISTATUS*. Very common.

The sacred bird of the Thakurs of the country.

818. *FRANCOLINUS VULGARIS*.

♂. Wing 6·3, tail nearly 1, tarsus 1·75 inch.; ♀ a trifle smaller. Out of eight specimens none has the wing under 6 inch. The birds are larger than usual, and though generally distributed, they are not common, and solitary. I shot two or three in the Wagur district, but have not seen nor heard through the whole of Kachh of a different kind of black partridge, as indicated by Capt. McMurdo and Mr. Hume, (comp. Journ. A. S. B. vol. xxxviii, pt. ii, p. 190 and vol. xxxix, pt. ii, p. 121); and I can only conclude that Capt. McMurdo was misled by the size of the bird, so as to regard it as a different species. To what species Mr. Hume's bird belonged, it is really difficult to say.

They generally roost on low trees.

822. *ORTYGORNIS PONTICERIANUS*. Very common.

♂. Wing 5·5 to 5·75, tail 3·3 to 3·6, tarsus 1·4 to 1·5.*

The wing in two females in 5·25 and 5·5 inch, they have the throat distinctly tinged with ferruginous, while in the males it is almost quite

* Jerdon says 'not quite 2" !

white. This partridge is extremely common throughout the country, it is quite a homely bird and often enters houses. It invariably roosts on trees, particularly on the Kundu, two or three generally sitting together on a branch between a thick cover of foliage. It generally goes to roost shortly after sunset.

827. *PERDICULA ASIATICA*. Not common.

All the feathers of the upper plumage have in the male one, or generally two, tawny spots along the shafts, bordered with dark.

829. *COTURNIX COMMUNIS*. Local.

832. *TURNIX TAIGOOR*. I have seen and shot this quail only on two occasions, they were solitary males.

836. *EUPODOTIS EDWARDSII*. Not common. (The bustard of Europeans).

837. *HOUBARA MACQUEENII*. Common, and though generally distributed, it is most abundant in the eastern and southern portions of Kachh.

839. *SYPHROTIDES AURITUS*. The florican is not found during the winter, but is very abundant during the rains.

840bis. *CURSORIUS JAMESONI*, Jerdon, ? = *GALLICUS*. Very common.

Wing 6·3 to 6·75, tail 2·4 to 2·7, tarsus 2·1 to 2·3, bill at front 0·8 to 1 inch. In the young the whole of the upper plumage is isabelline, crossed by somewhat undulating dark lines or narrow bands, and the black wing feathers are margined towards the tips with pale; the lower plumage is generally albescent throughout, pale isabelline on breast and with a few brown cross lines. The first change is indicated by the appearance of the white occipital band, then comes the ashy on the occiput, then the lower black band from behind the eye, and at last the cross black band, separating the ashy from the white on the hind occiput. As this gradual change in the occipital bands takes place, the brown lines on the other plumage are gradually disappearing, and young birds shot in January still had them on the wing coverts and on the vent, but somewhat later every trace of the brown lines disappeared, and in the adult the isabelline plumage has a conspicuous rufescent tinge on forehead, hind neck, scapulars and on the upper side of the tail.

I have no specimen of the European bird to compare, but as far as I remember it from having often seen it in former years in Southern Hungary, it strikes me that the flight and the habits of *C. gallicus* are somewhat different. The Indian bird appears to be more solitary, its flight seems to be slightly heavier, and the voice more shrill.

849. *ÆGIALITES EURONICUS*. Common.

Gray (Handl., III, 15) gives *euronicus*, Besek, as synonym of *fluvialis*, but quotes *Philippinus*, Lath., from India.

852. *CHETUSIA*? *GREGARIA*. Very common in open country, and often seen with *Cursorius*.

Winter plumage: Forehead and superciliary band passing round the occiput white, the former slightly, the latter distinctly tinged with rufous; top of head impure blackish brown; back of neck pale rufescent ashy, many of the feathers being usually tipped pale; general plumage above slightly olivaceous ashy brown, somewhat darker on the rump; primaries black, secondaries white, tertials olivaceous, the last feathers much lengthened; upper tail coverts white; tail white, with a black subterminal band, not extending on the outermost feathers. Lores white, with the shaft of the feathers black and the nude terminations somewhat prolonged; a narrow blackish streak through the eye; ear coverts, and sides of neck slightly rufescent brown, passing on to the breast, on which most of the feathers are subterminally darkened, forming subtrigonal marks. Chin, throat, and the whole lower side from beyond the breast, including lower wing and lower tail coverts, pure white. Wing 8 to 8·3; tail 3·5 to 3·7; tarsus 2·2 to 2·3; bill at front 1·1 to 1·2.

Gray (Handlist, III, 11) adopts the name *Wagleri* for the Indian bird, but I do not know in what our bird differs from the European *gregaria*. A comparison of authentic specimens is needed.

855. *LOBIVANELLUS INDICUS*, (Bood.) Very common.

G. R. Gray, (Hand-list, III, 11,) gives *L. indicus*, Bodd., = *goensis*, Gm., = *atrogularis*, Wagl. Wing 8·5 to 8·9; tail 4·25 to 4·75; tarsus 2·75 to 2·9; bill at front 1·2 to 1·3 inch. It generally keeps near villages about tanks and wells. At the first dawn its characteristic call is heard and repeated all round the habitations.

856. *SALCIPHORUS *BILOBUS*. Very common.

Average measurements of six specimens, shot in December and January. Wing 7·7 to 8, tail 3·1 to 3·3, tarsus 2·3 to 2·5; bill at front 1·1 to 1·2 inch. The black of the top of head is in winter generally mixed with greyish brown, and in younger birds it is almost entirely brown; the chin in the young is whitish, while in adults apparently it is in winter much mixed with black.

Gray (Hand-list, III, 12) gives *Hoplopterus Brissonii*, Wagl. = *bilobus*, Aliq. = *ludoviciana* var β ., Lath., from India; and *H. (Lobiplucia) malabaricus*, Bodd., = *bilobus*, Gm. = *myops*, Less., from Malabar. If the latter reference applies to our bird, it has in that case to stand as *malabaricus*, which would not be a very appropriate name for it.

859. *CECILENEMUS INDICUS*, Salvadori. Common.

Comp. Atti R. Acad. Sc. Nat. 1866, viii, and Ibis, 1866, II, p. 415.

Average measurements of six specimens: Wing 8·5 to 8·8; tail 4·25 to 4·5; tarsus 2·8 to 3·3, bill at front 1·45 to 1·65 inch. The bird is called *Chackua* by the natives.

Gray (Hand-l., III, 9) questions the distinctness of *indicus* from

crepitans of Europe; it certainly barely differs; the nude space behind the eye is in the European bird of less extent, than it is in the Indian.

863. *GRUS ANTIGONE*. Tolerably common.

A sacred bird with the Mahomedans, who will not kill a *Saras*. It is almost always seen in pairs.

865. *GRUS CINEREA*. Common.

About the beginning of February the birds collected in very large flocks, and by the middle of that month nearly all of them were gone, only solitary and probably sickly birds remaining.

871. *GALLINAGO SCOLOPACINUS*.

As there are very few swampy grounds, the bird is of course very rare. I have not seen more than about a dozen pairs. One has the wing 5·2, tail 2·2, tarsus 1·3; middle toe with claw 1·5; bill 2·9 inch. The shorter lower wing coverts are white with blackish bars and the longer ones grey with white edges, which in *G. stenura* are replaced by white and dark bars.

875. *LIMOSA AEGOCEPHALA*. Very common.

All the specimens I shot had the white of the face round the bill, extending over a portion of the superciliary band, tinged with golden. It is a very restless and quarrelsome bird, whenever two of them meet each other on the edge of the water. Before the end of October few birds were seen, but they became plentiful about the middle of November. In February none had yet changed their winter garb.

880. *PHILOMACHUS PUGNAX*. Very common.

Male: wing 7·3 to 7·7; tail 2·25 to 2·6; tarsus 1·8 to 2; middle toe with claw 1·6; bill at front 1·3 to 1·4. The general tone of the upper plumage above is ashy brown, the wing coverts are uniform dark brown, more or less tipped with white, but not barred. Bill blackish, more or less variegated with yellowish fleshy at the base.

In the female the general tone, above, is slightly richer, all the pale coloration having a faint rufescent tinge. In other respects both sexes are exactly similarly colored, all the feathers of the upper plumage being darker about the centres. Her bill is black and the feet greenish black. Wing 6·15; tail 2·2; tarsus 1·55, mid toe with claw 1·4; bill at front 1·2 inch.

I have seen them generally feeding in company with pigeons near places where grain was collected after the harvest.

885. *TRINGA TEMMINCKII*. Not common.

891. *ACTITIS GLABEOLA*. Very common.

Specimens, shot in December and January, have the longer upper and lower tail coverts with dark blackish cross bars, the latter besides streaked with the same colour along the shafts. The outermost tail feathers as a rule have some dark spots on the outer webs.

892. *A. OCHROPUS*. Very common.

The outermost tail feathers have as a rule a minute subterminal dark spot on the outer web, and the same applies to the longest upper tail-coverts.

893. *A. HYPOLEUCUS*. Very common.894. *TOTANUS GLOTTIS*. Very common.

Average measurements of four specimens: wing 7·2 to 7·8; tail 3·2 to 3·4, tarsus 2·4 to 2·6; bill at front 2·1 to 2·2 inch. Most of the upper tail coverts have dark cross bars, like the tail. There is a dusky streak from the base of the upper mandible towards the eye, superseded by a pure white band. Outer web of first minute primary and the shaft of the second, the longest one, white.

896. *T. FUSCUS*. Very rare.

The middle tail feathers have in a specimen distinct dark cross bars along the margins of both webs. First long primary with a white shaft, all are towards the margins of the inner webs minutely variegated with white and dusky brown.

897. *T. CALIDRIS*. Rare.

Wing 6·5, tail 2·5, tarsus 2·1, bill at front 1·8 inch. The first long primary has a white shaft, and all are albescant on the margin of the inner web; lower tail coverts more or less streaked or spotted with dusky; breast cinereous, all feathers dark-shafted.

898. "*HIMANTOPUS INTERMEDIUS*, Blyth. Very common.

The birds with brownish back and scapulars, blackish hind-head, and with a grey neck, are young. In some specimens the whole neck is white and the occiput black. One adult male, shot in February, had the whole head white, somewhat dusky behind the eye, on the occiput and a little lower below the occiput pure black, then purely white, back and wing glossy greenish black, rump white, tail ashy; below entirely white. It is difficult to imagine what the specific distinction should be between such a bird and, for instance, Gould's figure of *H. autumnalis*, Hasselq. = *melanopterus*, Tem., in 'Birds of Europe.' Gray (Hand-l., III, 17) quotes *H. candidus*, Bonn., as synonym of the European *autumnalis*, reserving Blyth's name *intermedius* for the Indian bird, but I do not think that the question as to the specific distinctness of the two can be considered as settled.

As regards size I found in Kachh specimens the following variations: wing 9 to 9·7; tail 3·2 to 3·3, tarsus 1·25 to 5·3; bill 2·5 to 3 inch.

899. *RECURVIBOSTRA AVOCETTA*. Not common.

In what appear to be rather young birds the dark upper coloration is mixed with brown, and the short wing coverts are mostly pale brown. An adult in full plumage, shot at the beginning of January, measures: wing 9·3, tail 3·5, tarsus 3·7, bill in a straight line from front to tip 3·35, this

being equal to the length of lower mandible from chin to tip, measured along the curve.

901. *HYDROPHASIANUS SINENSIS.*

I have seen only a few specimens on the larger lakes. The species breeds in Cashmir.

903. *FULICA ATRA.*

Is generally only seen on the larger lakes. One, rather a large specimen, measures: wing 8·6, tail 2·3, tarsus 2·5, mid toe with claw 3·8, bill to base of disk 1·9, from gape 1·5, height of bill at base 0·7. The bird is evidently an old one, it was one of a pair; the plumage in the middle of the breast is conspicuously mixed with white; the extreme edge of wing is white and the secondaries albescent.

923. *ARDEA CINEREA.* Not common.

There is a great deal of pure black at the sides of the base of neck and of the anterior breast, extending on either side to the middle of the abdomen, in other respects the plumage agrees with Jerdon's description which is of course that of the winter garb.

926. *HERODIAS INTERMEDIA*, v. Hasselquist, = *EGRETTOIDES* (Tem.).

Very common. Wing 13, tail 4·75, tarsus 5, mid toe with claw 3·75; bill at front 3·5 inch. Comp. G. R. Gray, *Handl.* III, 28.

927. *H. GARZETTA.*

Rare, and while the former species is usually seen near tanks, the present one prefers streams, and appears to be more solitary. Wing 11·25, tail 4·25, tarsus 4·25, mid toe with claw 3, bill at front 3·65 inch. This specimen was shot on 21st February; it had the occipital crest not fully, but the dorsal train and lengthened pectoral feathers well developed.

928. *DEMIGRETTA SACRA*, Gmel., = *ASHA*, Sykes. Not common.

Comp. G. R. Gray, *Handl.* III, 28.

In a couple of young birds, with brownish ashy plumage and white on the throat and winglet, the wing is 10·75, tail 3·5, tarsus 3·9, mid toe with claw 2·8, bill at front 3·5 inch.

929. *BUPHUS COROMANDUS.* Very common.

Birds shot on 19th December (*i. e.* in the middle of the winter months) had the upper head tinged golden, and a few golden occipital crest feathers about one inch in length. Wing 9·75, tail 3·5 to 3·8, tarsus 3·5, mid toe with claw 2·75, bill at front 2·3 to 2·4, the same from gape 3·2 inch.

930. *ARDEOLA LEUCOPTERA.* Not common. Wing 9 and tail 3·5 inch.

931. *BUTORIDES JAVANICA.* I have only seen, and shot, a solitary specimen, with the pale triangular spots on all the wing coverts.

937. *NYCTIARDEA NYCTICORAX*, L. = *Nycticorax griseus.*

Is also decidedly rare in Kachh. I have seen only a few specimens in the plumage of the young, which in general tone is very like that of the

previous species, but without the strong metallic lustre. One measures: wing barely 11 inches, bill 2·5, the other measurements exactly agree with those given by Jerdon.

938. *TANTALUS LEUCOCEPHALUS*. Very local, and a shy bird.

An apparently old specimen, but with a broad dark brown band (the feathers in it being, however, tipped white) across the hind breast, shot on 8th February, measures: wing 21·5, tail 7, (the longer lower tail coverts being very much lengthened, soft and decomposed), tarsus 10, mid toe with claw 5·2; bill at front 11 inch.

939. *PLATALEA LEUCORODIA*. Rare.

941. *THRESKIORNIS MELANOCEPHALUS*.

The single specimen seen, and shot in December, has the entire plumage white, merely the lengthened tertials are pale silvery ash towards their terminal halves. Measurements the same as those given by Jerdon.

942. *GERONTICUS PAPILLOSUS*. Very common.

The bill of this species is slenderer, but not longer than that of the last.

944. *PLENCOPTERUS ANTIQUORUM*, Temm.

Comp. Gray in *Ibis*, 1869, v, p. 441.

I saw only two or three flocks of this species at some large tanks in the Wagur district, young and old birds associating.

952. *DENDROCYGNA ARCUATA*. Rare.

957. *SPATULA CLYPEATA*. Very common.

There was scarcely a pool of water to be met with without a few of these birds on it.

961. *CHAULELASMUS STREPERUS*. Very common.

On the 1st November, I met with six half grown ducks on a small lake near the village Dhosa. I shot one, but unfortunately did not preserve it. At the time I had the impression that I shot a young gadwall, and certainly it could only have been either this species, or *Anas boschas* which I saw on the same lake; but I rather think it was the former. I did not know at the moment that the breeding of the gadwall had not been recorded in India.

962. *DAFILA ACUTA*. Common.

964. *QUERQUEDULA CRECCA*. Very common.

968. *AYTHYA FERINA*. Rare.

An apparently young female with the upper plumage as in the old, but with the whole of the underparts dull white mixed with pale brown, tinged rufous on chin, neck and breast, and of a somewhat darker hue on the vent, measures: wing 8, tail 2, tarsus 1·45, mid toe with claw 2·6, hind toe with claw 0·75, bill from gape 2 inch.

969. *AYTHYA NYROCA*. Rare.

971. *FULIX** *CRISTATA*. Not common.

975. *PODICEPS* *MINOR*? = *PHILIPPENSIS*, Bonn. = *minor*, var. β ., Gm.
Very common.

Wing 4 to 4·25; tarsus 1·3 to 1·4, mid toe with claw 2, bill at front 0·7 to 0·8, from gape 1·1 to 1·2 inch.

980. *LARUS* (*CHIROICOCEPHALUS*) *BRUNICEPHALUS*.†

Not common, except along the coast and locally in the Rann. The respective measurements of two specimens are: wing 12·3 and 13·4, tail 4·4 and 4·8; tarsus 2 and 2·22; mid toe with claw 1·65 and 1·8; bill at front 1·3 and 1·5; from gape 2·2 and 2·6 inch. The iris is chocolate brown, bill yellowish, black towards tip; feet yellowish brown. The quills are black; except towards the base, and beginning with the fourth all have a small white tip, gradually increasing in extent on the succeeding feathers. Both specimens, although somewhat small in size, agree perfectly in coloration, which does not appear to differ from the winter plumage of this bird, as usually recorded.

983. *GELICHELIDON* *NILOTICA*, Hasselq., = *anglica*, Mont.

Local, and not common, except on or along the Rann. Average measurements of three birds, with the loreal region blackish, the occiput and top of head ashy white, and the grey primaries externally tipped darker on *both* webs: wing 11·2 to 11·8; tail 4·5 to 4·8; tarsus 1·3 to 1·35; mid toe with claw 1·15; bill at front 1·35 to 1·5 inch. Iris, feet and bill entirely black.

984. *HYDROCHELIDON* *INDICA*.

I saw a considerable number of these birds on the tanks in the Rann islands, Pacham and Kharir, but scarcely any on the tanks in Kachh proper. Iris and bill in fresh specimens black†; feet blackish brown.

1005. *GRACULUS* *CARBO*. Not uncommon on the larger lakes.

1007. *GRACULUS* (*MICROCARBO*) *MELANOGNATHUS*, Brandt.

G. R. Gray (Handl., III, 129) gives *javanicus* of Horsfield as a synonym of the above, but he allows *niger*, Vieillot, as a distinct species from 'S. Asia.'

1008. *PLOTUS* *MELANOASTER*.

I met with only solitary specimens of both this and the preceding species.

* *Fulix*, Sundev., 1835 = *Fuligula*, Seph., ex parte; vide G. R. Gray, Handl., III, 86.

† Gould has besides this and *ridibundus* a new species, named *Tibetanus*.

‡ In dried specimens the bill has distinctly a reddish tinge.

Postscript.

While the preceding pages were passing through the press, I received from Dr. W. de Tatham at Bhuj a few additional specimens of mammals and tortoises, of which I had not been able to obtain examples at the time of my visit. They are—

Pteropus medius, mentioned at p. 223. The specimen sent agrees in all essential points of structure and coloration with those from other parts of India; it has a total length of about 11·5 inches, which is very nearly the length of the middle finger; the ears are 1·2 inch long and only 0·7 inch broad, while in other specimens from India the ears generally have a greater breadth. Most of the Indian specimens also have a considerably longer middle finger.

Erinaceus pictus, see p. 223. An adult specimen of this species is 6·5 inches long; in coloration it exactly agrees with the half grown one from which my description was taken, except that the lower belly is less brown, the white extending to nearly within the interfemoral space. In the younger specimen the dentition is normal, agreeing (according to Owen's Comparative Anat. and Phys., III, p. 308) with that of *E. europæus*, the formula being $i. \frac{3.3}{3.3} + c. \frac{1.1}{0.0} + p. \frac{3.3}{2.2} + m. \frac{3.3}{3.3} = 36$. The two anterior incisors are very far apart and have the form of canines of *Carnivora*, the third on each side is very much larger than the second, which again is considerably smaller in the upper than in the lower jaw. What is considered as a canine in the upper jaw, is by other Osteologists often accepted as the first premolar. The true first premolar in the upper jaw is smaller than the canine, the second premolar is minute, and in the adult specimen it is altogether absent, it has probably become obsolete; the last premolar is tricuspid in upper and bicuspid in lower jaw; the formula of the adult dentition would, therefore, appear to be $\frac{3.3}{3.3} + \frac{1.1}{0.0} + \frac{2.2}{2.2} + \frac{3.3}{3.3} = 34$, but there is a short space visible between the two premolars in the upper jaw, while the first premolar is very close to the canine.

Of tortoises Dr. Tatham sent me a specimen of the *Testudo*, mentioned in my notice* on the Reptiles of Kachh; it proved to be *T. elegans*, Schoef, as recorded by Günther, or *Pellustes stellatus*, (Schweig.), according to Gray. (Suppl. to Cat. of Shield Rept., 1870, p. 8).

The *Emyda* referred to in the same notice is, Dr. Anderson informs me,

* Proceedings for May, p. 72. By an error, I stated that the species, which was described to me by a native, is like *T. Goughi*, which specific name should be *Leithii* of Günther.

most probably *vittata* of Peters. He sent a drawing of a middle-aged specimen to Prof. Peters, who says that there is no distinction traceable between the figure of the Kachh specimen and the type of *vittata*. The head, above, is spotted with dark, and the entire carapace is marked with very numerous irregularly radiating dark streaks. The granulation of the carapace becomes apparent after the epidermis has dried up, in fresh specimens no trace of it is to be seen. Young specimens are rather flat, but in old ones the convexity of the carapace is very considerable, and the shell is somewhat depressed along the centre. The species is common both in rivers and tanks, and is often met with crawling from one pool of water to another; I have seen specimens up to a length of 15 inches. One, recently received, has the carapace 10·5 inches long, and 7·7 broad across the abdomen; and the total height is nearly 3·5 inches. The odd osseous antero-central plate of the sternum is broadly rounded, somewhat narrower in front than behind, 1·3 inch long and 1·5 inch broad; the two posterior plates form a suture, 2·3 inch long, they are perfectly united, as in *E. Ceylonensis*, which has a quite similar coloration, and to which *vittata* is united by Gray in Shield Rept., 1870, p. 117.

NOTES ON FISH, COLLECTED BY DR. STOLICZKA IN KACHH,—
by Surgeon Major F. DAY.

[Received 26th June, read 3rd July, 1872.]

I am indebted to Dr. Stoliczka for the following eighteen species of fish with their local names, collected by him during his recent tour through Kachh. They are interesting as extending our knowledge of the localities to which species spread, and also as first demonstrating the existence of the Genus *Cyprinodon* in the fresh waters of India.

Fam.—GOBIDÆ.

1. *Gobius giuris*, Ham. Buch. *Kharba Mah. Tulli*, Kachh.

Five specimens up to 6 inches in length.

The inferior pharyngeal bones are each of a triangular shape, the base being external, whilst the two bones are closely approximated together along nearly two-thirds of their internal margins.

Fam.—OPHIOCEPHALIDÆ.

2. *Ophiocephalus punctatus*, Bl. *Dhor*, Kachh; *Dhuka* by foreigners.

Fam.—CYPRINODONTIDÆ.

3. *CYPRINODON STOLICZKANUS*, sp. nov.

B. III, D. 1/8, P. 17, V. 7, A 2/7, C. 15, L. 1. 27, L. tr. 8. .

Length of head 1/4, of caudal 1/5, height of body 1/4, of dorsal and anal fins 1/3, (in the males), about 1/8 in the females, of the total length. *Eyes* :

diameter $\frac{1}{3}$ of length of head, 1 diameter from end of snout, and $1\frac{1}{2}$ diameters apart. Head thick, snout somewhat obtuse, upper jaw rather protractile. *Teeth* in a single row, compressed, tricuspid. *Fins*: dorsal, in the males, commences midway between the middle of the eye and the base of the caudal fin, opposite the ninth scale of the lateral line, whilst in the females its origin is between the opercle and the base of the caudal, but still opposite the 9th scale of the lateral line. In the males the dorsal and anal fins when laid flat reach the base of the caudal; the anal commences below the last dorsal ray. Caudal lunate, its outer rays being slightly produced. The ova are exceedingly large, almost equalling the diameter of the eye, of the same size as in *Haplochilus paucibar*, H. B. The length of the intestinal canal equals about three times that of the abdomen. *Colours*: male, yellowish green, reticulated with brownish green, a small black spot on the shoulder behind the opercle; dorsal fin spotted, anal more sparingly so; caudal yellowish with a crescentic black band in its outer third, and a second less wide (but still broader than the ground colour) between the outer one and the root of the caudal fin. Female, silvery, with about nine vertical black bands extending from the back to the abdomen. Out of 28 specimens the largest is 1.6 inches in length; they were obtained in a small nearly quite fresh-water stream at the village Joorun, and also at Lodai, along the edge of the Rann.

4. *Haplochilus rubrostigma*, Jerdon. I found this species likewise in the fresh waters of the hills between Sind and Bilúchistan.

Fam. CYPRINIDÆ.

5. *Discognathus lamta*, Ham. Buch. *Malék*, Kachh.

6. *Labeo calbasu*, Ham. Buch. *Dai*, Kachh.

Out of five specimens three have D. $\frac{1}{3}$, and in the majority the length of the head is $\frac{1}{5}$ of that of the total length. This fish is found in Sind, and I have also taken it at Jabalpúr in Central India &c.

7. *Labeo boggut* Sykes. *Loi*, Kachh.

B III. D. 29, P. 17, V. 9, A. 25, L. 1. 60—65, L. tr. $12\frac{1}{2}$ /15.

Length of head $\frac{2}{11}$, height of body $\frac{2}{5}$ of the total length. *Eyes*: diameter $\frac{2}{9}$ of length of head, $1\frac{1}{2}$ diameters from end of snout and 2 diameters apart. Snout thick and somewhat projecting beyond the lower jaw, having a small lateral lobe. Interorbital space convex. A small maxillary but no rostral barbel. Lower lip fimbriated, sometimes having a distinct inner fold; pores on the snout in some specimens. *Fins*: dorsal commence somewhat in advance of the ventrals, and nearer the end of the snout than the root of the caudal. *Lateral line*: eight to nine rows of scales between it and the base of the ventral fin. *Colours*: silvery, darkest superiorly, occasionally a series of light vertical bands descend along the middle of the side; fins orange.

Several specimens up to 6 inches long from Kachh; others from Pána and Jabalpur, where it was termed "Kolces," as stated by Sykes; and one specimen in the Calcutta Museum came from Nagpur.

Very probably this species may prove to be identical with *Tylognathus striolatus*, Günther, which is stated to have come from Pána.

8. *Cirrhitina mrigala*, Ham. Buch. *Moraka*, Kachh.

Snout tuberculated; length of head $\frac{1}{5}$ in the total length; five specimens up to 8 inches in length.

9. *Cirrhitina bata*, Ham. Buch. *Tehirri*, Kachh.

Several specimens up to 6 inches in length.

10. *Cirrhitina dero*, Ham. Buch.

B. III. D. 3, 9, P. 19, V. 9, A. 2, 5, C. 19, L. 1. 39, L. tr. $7\frac{1}{7}$.

Length of head $\frac{2}{11}$, of caudal $\frac{1}{5}$, height of body $\frac{1}{5}$, of dorsal fin $1\frac{1}{6}$ of total length. *Eyes* rather high up, diameter $\frac{1}{5}$ of length of head, $1\frac{1}{2}$ diameters from end of snout, and 2 diameters apart. *Maxillary barbels* minute and concealed in the groove. Snout rather overhanging the mouth and having some open glands across it. Lower jaw the shorter, with a ridge above the symphysis. *Fins*: dorsal commences midway between the end of the snout and the posterior border of the base of the anal fin, its last ray divided to the root, its upper border very concave, the anterior two and the last ray being elongated; pectoral rather shorter than the head, and not reaching so far as the ventral; caudal deeply forked, its lobes being of equal length. *Scales*: $5\frac{1}{2}$ rows between the lateral line and the base of the ventral fin. *Colours*: greyish superiorly as low as the row of scales above the lateral line, wherefrom it becomes silvery white. Several specimens up to 6 inches long. I also obtained two others in Calcutta.

I should have hesitated identifying this fish with Hamilton Buchanan's merely from the engraving; for that shows very long barbels, but is otherwise correct, even to the relative proportions, but in the text he observes "at each corner of the mouth is a minute tendril."

11. *Barbus sarana*, Ham. Buch. *Popri*, Kachh.

12. *Barbus ticto*, Ham. Buch. *Phiori*, Kachh. No black spot at the commencement of the lateral line; dorsal and anal fins tipped with black.

13. *Barbus stigma*, Cuv. and Val. Very numerous.

14. *Barbus vittatus*, Day. Twelve specimens up to 1.5 of an inch in length. The last undivided dorsal ray is articulated.

15. *Nuria danrica*, Ham. Buch.

16. *Rushora daniconius*, Ham. Buch. *Jonir* or *Goner*, Kachh.

17. *Chela bacaila*, Ham. Buch. *Vai matchi*, Kachh.

Family.—SILURIDE.

18. *Macrones carcio*, Ham. Buch.

Local, only found in the deep recesses of streams. Another larger species also occurs, it is probably *Macrones aor*, H. B.

ON THE LAND SHELLS OF PENANG ISLAND, WITH DESCRIPTIONS OF THE
ANIMALS AND ANATOMICAL NOTES; *part first*, CYCLOSTOMACEA,
by DR. F. STOLICZKA.

(Read and received 6th August, 1872).

[With plate X.]

Penang, or Prince of Wales island, although possessing a rich vegetation, growing on old metamorphic soil, a moderately hilly ground, and a moist warm climate,—all elements most favorable to Molluscous life,—has up the present time yielded a comparatively very small number of land shells, and this in spite of the repeated visits which it had received from numerous travellers to the East. I can scarcely find record of more than ten species of both CYCLOSTOMACEA and HELICACEA, which had been reported to occur on Penang. The paucity of shells seemed to me scarcely credible; but, when visiting the island in 1869, I was not a little astonished to meet for days with nothing else except *Balanus atricallosus* and *citrinus*, and *Helix similis* in the low country, cultivated with coco-palms and nutmegs, while in the hills the only common species were a *Rotula* and *Cycloph. Malayanus*, Benson's *Helix Cyactium*, described from Lancavi, being much rarer. After many days wanderings I noticed that all those portions of the ground, which at any, even remote, time shewed signs of having been once under cultivation, were hopeless in a malacological point of view, and I turned into the more wild and deep ravines of the North-Western part of the island. There, after some days search, particularly in the extensive and very dense forests along the edges of more open tracks, abounding with a rich under-vegetation, I was more successful by adding a good number of land shells to the few already known. Many of these are new to science, and as I had obtained all the species alive, and noted the peculiarities of the structure of the animals, my observations, even as regards the few formerly described species, may be useful in supplementing the information which we already possess.

I shall begin in this first part of the paper with the CYCLOSTOMACEA, of which ten species will be reported. My remarks will on this occasion not enter into anatomical details, because I wish to reserve these for a comprehensive study on the anatomy of all the Indian and Barmese species of this group, and the isolated facts would not prove equally interesting as when related in connection with others.

In the second part, which will treat of the HELICACEA, I will, however, give all those anatomical details, which are in many instances essential for the correct determination of the different genera.

Group.—CYCLOSTOMACEA.*Fam.* CYCLOPHORIDÆ. *Genus,* CYCLOPHORUS, Montf.

CYCLOPHORUS MALAYANUS. Pl. X, Figs. 1-5.

Benson, A. and M. N. H., 2nd ser., vol. x, p. 269. Pfeiffer, Monograph Pneumopomorum. Suppl. I, p. 42. Reeve, Conch., vol. xiii, *Cyclophorus*, pl. 1, fig. 2.

This is a tolerably common species on Penang, being generally distributed from near the seashore to the top of Penang hill, about 2500 feet.

I have given a whole series of illustrations in order to shew the different stages of growth, although Reeve's figure is a very good representation of an adult specimen.

Ordinarily the shell is smooth, exhibiting only the usual finer and stronger striae of growth, but the pale brown and thin cuticle when well preserved is spirally striated, the striation being more conspicuous in younger shells than in more adult ones.

Young specimens of only two or three volutions have very conspicuous transversely oblique cuticular striae, and in this stage the shell with its angular last whorl perfectly resembles Pfeiffer's *Cyclostoma (Leptopoma) Bermanum*,* which is no doubt either a young of the present species or of *C. Siamensis*. Nearly all young *Cyclophori* have these transverse filiform striae of the cuticle.

When larger the shell scarcely differs from that of *C. Cantori*, Benson, of which figures are given by Pfeiffer in Chemnitz' Conch.-kab., and also by Reeve. I have not obtained in Penang any such small specimens with fully developed lips as are represented in those figures, but I have observed that the usual difference of the male being often slightly smaller than the female also exists in the present species, and an illustration of a nearly full grown male, given in fig. 4, comes very close to that of Reeve. Judging from the difference observed in the size of the sexes of other species, as is for instance very often the case in *C. Pearsoni*, I am inclined to the opinion that the specimens described as *C. Cantori* are males of *C. Malayanus*, the latter being females. If this were the case, the former name would have priority over the latter, but even if the explanation of sexes would not in this case hold good, I believe that the form described as *Cantori* can scarcely be looked upon as anything else than a smaller race of *Malayanus*, and *vice versa*.

The animal is grey, darker on the head, brownish on the tentacles, pale towards the tip of the rostrum and at the basal edges of the foot.

* Chemnitz' Conchylien-kabinet, Vol. IX, p. 363, and Mon. Pneum. Suppl. II, p. 85.

What Hauley figures, in Couch. Indica, pl. xlviii, fig. 4, as *C. Malayanus* from the Shan States, has, I believe, nothing to do with the Penang shell, though it may represent a variety of *Siamensis*, or a peculiarly depressed one of *flavilabris*, but it is impossible to form a good idea of the character of the species from the insufficient illustration given.

CYCLOPHORUS BORNEENSIS, var. Pl. X, Fig. 6.

Metcalfe, Proc. Zool. Soc. 1851.—Pfeiffer in Chem. Conch., XIV, p. 362 and Mon. Pneumon. p. 63.—Martens, Ost.-As. Exped., p. 136.—Reeve, Conch. Vol. xiii, *Cyclophorus*, pl. xii, fig. 50.

The Penang variety of this species is flatter, somewhat sharper keeled at the periphery, and with a slightly more expanded lip than exists in any Bornean specimens I saw, but the general type of the shell is unmistakable. It is a rare species on Penang hill; I found during many days search only two adults* and one young. The former are covered with a rather thick dark brown cuticle, marked with very fine transversely oblique and also with spiral striae, by which a kind of a very minute granulation is produced. There is a row of larger brown spots along the suture, while the rest of the whorls is densely variegated with reddish brown, most conspicuous after a partial removal of the cuticle, and the keel is slightly funiculate. This coloration is almost exactly like that of *C. porphyriticus*, as figured by Pfeiffer in Chemnitz' Conchilienkabinet.

One of the most important characters of *Borneensis* is the straightness and slight concavity of the inner portion of the peristome along the umbilical margin, followed by the basal portion being somewhat produced. This character also occurs in *C. aquila* and *perdis*, with the last of which Benson's *C. porphyriticus* has been considered as identical. E. v. Martens already observes (l. cit. p. 135) that it is impossible to give a well defined diagnosis of *C. aquila*, as the species is very variable and readily passes into *Borneensis* and *perdis*. I have not a sufficient series of authentic specimens from different localities, but the few from Penang, Singapore and Borneo entirely support the view expressed by E. von Martens, and make it most probable that the different names noticed only refer to the principal varieties of one and the same species. It is unquestionable that even in true Bornean specimens the upper convexity of the whorls is sometimes greater sometimes less, the keel on the last whorl sharp, or obtuse, or again almost obsolete, and in consequence of this the sharp edged last whorl passes into an obtusely angular or even slightly rounded one, and that with these variations the height of the entire shell must naturally vary.

I possess Singapore specimens of *Borneensis* which exactly agree with *C. porphyriticus*, as figured by Pfeiffer in Chemnitz, and as this figure is

* The figured specimen is the more depressed one.

authentic, being taken from the type in Benson's collection, I would not hesitate to add *porphyriticus* as a synonym of *Boracensis*. Sowerby's original figures of *perdis* (at least fig. 127 in Thes. vol. I) and of *aquila* scarcely differ, and both very well agree with the form of *Borneensis* as usually obtained at Singapore, having the whorls above rather inflated and the periphery very obtusely angular. The same applies to Chemnitz's figure of *aquila*, while that of *perdis*, after Tenasserim specimens, very closely corresponds with one of my Penang specimens of *Borneensis*, except in having a greenish cuticle. Reeve's figure of *aquila* is probably taken from a specimen obtained inland north of Singapore; those specimens are particularly fine and probably most aberrant from the type shell, which Reeve figured as *Boracensis*, while his figure of *perdis* has the whorls as round as *Siamensis*, and though it may belong to the same species as represented by Sowerby's figure 128 in Thes. vol. I, I do not think that it can at all be referred to the *Boracensis* group, because it appears to want the peculiar straightness of the inner portion of the peristome.

The solution of this question of identity depends now upon a comparison of the type-specimens of Sowerby's *C. perdis* and *aquila* with a good series of typical *Borneensis*, as represented in Borneo, near Singapore, Malacca and Penang; for it will also determine the nomenclature of the latter species.

The animal of the Penang variety of *Borneensis* is uniform pale brown with a slight pinkish tinge, and covered with numerous flat greyish warts; the foot is rather narrow and very long posteriorly, the lateral basal portion below the pedal row is warty, not sulcated; head slightly darker than the body, tentacles blackish near the tip; eyes on small bulgings, surrounded by a pale ring; mantle greyish, thick near the margin. There is scarcely a noticeable difference in the size of the sexes.

The only other species of *Cyclophorus* which I have to mention, and which has been described from Penang, is *C. Pfeifferi* of Reeve. It belongs to the section of *C. tuba* with a very much expanded peristome, without any markedly straight inner, or produced basal portion. E. v. Martens (l. cit. p. 134) states that it is probably not constantly different from *C. tuba*, but, setting aside the more inflated whorls of the latter species, I believe, *Pfeifferi* also differs from the last by a much more rapid increase of the volutions. In this point, as well as in the flattened and angular shape of the whorls, it, however, quite agrees with *expansus*, and a large specimen of this last from Tenasserim scarcely at all differs from Reeve's illustration; I would, therefore, be inclined to regard *Pfeifferi* as identical with *expansus*.

Genus. OPISTHOPORUS, Bens.

There is no apparent distinction between the shells of *Opisthoporus* and those of *Spiraculum*. A cursory examination of the animals of a few species also shewed, that no essential distinction exists in the general anatomical structure, and but a very slight one in the dentition.

The only difference, which as far as known is a constant one, consists in the structure of the operculum. In the former genus this is discoid, horny on the inner side, calcareous on the outer, and composed of spiral laminae entirely covering a tube. In *Spiraculum* the upper spiral layer is also generally calcareous, and more or less elevated, but the spiral canal is always open, not forming a closed tube. The former structure of the operculum is peculiar to *Cyclotus*, the latter to *Pterocyclus* and some species of *Cyclophorus*.

OPISTHOPORUS PENANGENSIS, n. sp. Pl. X, Fig. 7.

O. testa sub-discoides, apice paulum caesata, latiuscule umbilicata, corneo solidula; anfractibus 4·5 ad 5, teretibus, sutura profunda junctis, epidermide brunnea vel nigrescente, transversim coarctatissime striata, in ultimo anfractu ad peripheriam superam et inferam breviter ciliata, indurata, sub epidermide albescentibus atque strigis transversis, brunneis vel fuscis, paulo undulatis, aut plus minusve acute angulatis, notatis; apice sub-nodumutato, nigrescente vel pallido; umbilico modico, fere dimidium latitudinis anfractus penultimi exponente; ultimo anfractu ad aperturam valde descendente, sed haud dissoluto, ad suturam tubulo-brevi tenuique, saepissime retrorsum curvato, raris fere verticali, rarissimeque antice versus directo, in speciem aduatis circa 1·5 ad 2 mm. a margine aperturali distato, instructo; apertura circulari, ampla, obliqua, peristomate in junioribus simplici, in adultis breviter bilabiato, margine lobii interni paululum incrassato, saepe rubescere tincto, haud distincte discreto, externo expansiusculo; ambabus supra paulum productis atque prope suturam notice insinuatis. Operculum discoidum, interne cir. externe distincte, concavum et album, multispiratum, medio corneo-testaceum, laminae duabus separatis ad peripheriam acutissimis. Diam. maj. 11·5; diam. min. 9·5; altit. testae 6·6; diam. apert. int. 1, externae cum perist. 4·7 m.m.

This species is evidently closely allied to E. v. Martens' *O. Sumatranus*,* which is of nearly exactly the same size, but its whorls are decidedly thinner and on the upper side more flattened, the upper apertural margins are considerably more produced, the plain of the aperture being, therefore, more oblique to the axis, while the sutural tube appears to be more distant from the margin. The direction of the tube was observed in four specimens of *O. Sumatranus* to be nearly vertical, while in about eighty specimens of the

* Preuss. Exped. nach Ost-Asien., Zool. Theil, vol. II, p. 112.

Penang form it is directed backwards, being sometimes when well preserved perfectly parallel to the suture; in a few specimens, however, it is nearly vertical, and in two or three even slightly directed forward. The character is, therefore, evidently variable. Young shells, sometimes measuring up to 9 mm. in the longer diameter, still have no sutural tube developed, while others (mostly males) reach the adult stage already at even a somewhat smaller size.

Hab. I found the species common under dead leaves on the ground along the base of the Penang hill, mostly in dense jungle.

Animal stout, blackish, sometimes mottled with grey and tinged with pink, nearly smooth, with few little warts, paler at the sides and at the end of the foot which is, when fully extended, about twice the longer diameter of the shell; it is pointed at the end; operculigerous lobe slightly more thickened in front than behind; tentacles paler at base, blackish on terminal half, slightly thickened towards the end, but pointed terminally; eyes small, on laterally slightly prominent bulgings, united to the base of the tentacles; rostrum wrinkled, cleft in front, and with pale lips; penis of male long, thin and black, without any appendage.

OPISTHOPORUS SOLUTUS, n. sp. Pl. X, Figs. 8-10. •

O. testa planorbulari, apice paulo exserta, late umbilicata, corneo solidula; anfractibus 4-5, fere teretibus, supra et infra paululum depressiusculis, sutura profunda ac simplici junctis, in spec. junioribus ad peripheriam sub-angulatis; ultimo ad terminationem dissoluto, paulo expansiusculo modiceque deflexo, tubulo suturali antice directo, circiter 2 m.m. a margine aperturali distante, instructo; anfractibus superioribus epidermide fusco-olivacea, transversim rugata, in ultimo fere simpliciter confertimque striolata, indutis, omnibus sub epidermidem albidis, sparse scrobiculatis, transverse minutissime striatis; apice albedo; umbilico magno, anfractuum omnium maximam partem exhibente; apertura lata, circulari, peristomate duplici, interno tenai, paulum projiciente, externo undique modice dilatato, in facie antica concaviusculo et concentricè striato, in regione supra-suturali sensim producto; ambobus ad suturam anguste emarginatis. Operculum normale, in utroque latere vix concavum, multispiratum, medio corneo-solidum. Diam. maj. 15.5; diam. min. 11.5; alt. testæ 7.3; diam. apert. int. 4.3, ext. cum perist. 5.5 m.m.

Young shells of this species (comp. fig. 8) are regularly planorbular, with a simple, continuous, thin lip of the aperture, and the olivaceous epidermis is rather coarsely rugose, forming darker transverse bands; under the lens also a very fine spiral striation is to be observed. In the middle stage (fig. 9), when the shells possess 3.5 to 4 whorls, and a diameter of 10 to 13 m.m., the margin of the aperture has a short, open, sutural canal,

exactly as in the South Indian *Pteroc. (Myrostoma) tristis*, Blf., and which canal is the origin of the sutural tube, becoming fully developed in the more adult shell, as soon as the end of the last whorl begins to detach itself from the previous one.

Hab. Penang ; I have only obtained about 15 specimens of this species, also under dead leaves on the ground in dense jungle together with the last, which is, however, the more common one.

The animal is entirely of a rather pale grey colour, nearly smooth, slightly mottled with darker ; tentacles blackish, with a few darker spots about and between their bases, entirely black at tip ; rostrum cleft, wrinkled, with a pale lip ; lateral pedal row rather indistinct, as also in the preceding species.

Fam. PUPINIDÆ.

Raphaulus Loraini, which was described by Pfeiffer from Penang out of Cuming's collection, was not met with by me.

PUPINA AUREOLA, n. sp. Pl. X, Figs. 11-12

Testa oblique ovata, apice breviter sub-acuta, glaberrima, politissima, moderate solida, intense vel luteole succinea, prope peristoma aurea ; anfractibus sex, convexiusculis, in adultis sutura indistincta junctis, primis duobus sub-mammillatis, ultimo spira brevior, calde descendente ; apertura parva, circulari, labio incrassato, sulco satis profundo ab anfr. penultimo separato ; incisionibus angustis sed profundis ; labro antice sensim producto, extus paulum incrassato, aureo tincto. Operculum orbiculare, altum, corneum, ad utrumque latus paulo concavum, ex lamella spirali ter torta tenuissima compositum, nucleo depresso circulari, paullulum incrassato instructum. Long. testæ 8·8, lat. ad medium 5, diam. apert. ext. 2·3 m.m.

Hab. Penang ; haud frequens.

This species is closely allied to *P. aurea*, Hinds, differing from it by a smaller aperture, a more laterally produced, shorter and slightly contracted last whorl. The solidity of the shell and the intensity of coloration naturally varies with age ; young specimens are thin, and nearly transparent, pale straw-coloured, the suture is distinctly impressed and the outer lip very slightly produced. In adolescent specimens the upper labial rib is rather distant from the posterior angle of the mouth (see fig 11), as in the Tenasserim *P. arula*, but the Penang shell is shorter and stouter. Old specimens are entirely covered with a polished glaze, and are intensely or yellowish rufous brown, with a yellow inner and outer peristome.

The animal is of the usual Cyclophorid type, uniform, intense or greyish black, paler along the sides of the foot, which is of about the same length as that of the shell.

MEGALOMASTOMA SECTILABRUM, Gould. Pl. X, Fig. 13.

Penang specimens agree with those from Tavoy in having a smaller aperture and a slightly slenderer spire, with somewhat convex sides, while in *M. anostoma* from Borneo the spire is more regularly conical and the aperture larger.

Animal blackish grey with a slight reddish tinge; the edges of the foot, including the posterior end and the tentacles are vermilion, tips of rostrum pale grey. The length of the foot equals about three fourth of that of the shell when the animal moves about; the entire body is rather distinctly warty, but no well defined pedal row exists; the rostrum is adpressed to the foot, strongly wrinkled and cleft at the end; posterior end of foot obtusely pointed, eyes small, the bulgings united at their bases to the tentacles. The mantle is pale, entire, closely attached to the peristome of the shell, and not protruding beyond it.

Operculum horny, circular, composed of several spiral layers arranged round a slightly thickened or mammillated centre so that the width of each lamina equals the radius of the whole operculum. This structure is somewhat peculiar, it agrees with that of the South Indian *Catulus recurvatus*, but not with that of the other *Catuli* or *Megalostomata* examined; in all these the operculum is distinctly multispiral.

The species occurs at elevations from 400 to about 2400 feet on the Penang hill, but it is evidently a very scarce shell; I found only one live specimen at the top of the hill.

Fam.—DIPLOMMATINIDÆ. Sub-fam. ALYCEINÆ.

ALYCEUS GIBBOSULUS, n. sp. Pl. X, Fig. 14.

A. testa gibboso turrita, anguste umbilicata, violaceo rubente, ultimo anfractu pallidiore, lutescente, apice albescente; anfractibus quinque, valde convexis, sutura profunda et simplici junctis; primo lævigato, tribus sequentibus transversim densissime striato-costellatis atque spiraliter striatis, ultimo gibboso inflato, paulo distinctius costellato, prope aperturam breviter sed valde constricto, sub-lævigato, vic deflexo, post constrictionem tubulo tenui. circiter duo ad tres m.m. longo, nonnunquam fere immerso, instructo; apertura circulari, modice lata, in adolescentibus margine simplici undique expansiusculo circumdata, in adultis bilabiata, labio interno extus tubuliforme producto, crassiusculo, externo dilatato atque tenui. Operculum solidum, latere interno corneo, convexiusculo, medio submammillato, multispirato, impressione musculari transverse ovata atque excentrica instructo, externo calcareo, concaviusculo, in superficie irregulariter rugoso. Diam. maj. 9.2, diam. min. 7, alt. teste 9.6; diam. apert. int. 3.8, externa 4.8 m.m.

In general character this interesting new species closely resembles the type of the genus, *Al. gibbus*, Fér., but the latter conspicuously differs by

having the constricted portion of the last whorl much more produced and very much deflected, the height of the shell being also considerably less than the larger diameter of the shell. Eydoux who collected the species at Touraine in Cochinchina, says in his original description,* that the operculum is membranaceous and not multispiral.

The species is not uncommon along the base of the hills in thick jungle, under and on large blocks of rocks, generally between half decomposed vegetable matter.

The animal is dusky grey, foot pale; tentacles long, pale at the base, further on dark, especially at the tips which are slightly thickened; eyes small, placed laterally at the bases of the tentacles, but the bulgings are not distinct; rostrum long, cleft at the end, reddish at the base on account of the fleshy colour of the manducatory apparatus.

Em.—LAGOCHEILIDÆ.

Genus. LAGOCHEILUS, Theobald.

Comp. Blanford in Ann. and Mag. N. H., third Ser., 1864, vol. XIII, p. 452.

Shell conoid sub-turbinate and perforated, thin, covered with a horny cuticle; aperture round with a narrow incision in the upper or posterior angle; operculum thin, horny, multispiral. Animal of the usual Cyclophorid type, but with a glandular slit at the upper posterior end of the foot.

The shell of *Lagocheilus*, when the cuticle is removed, merely differs from *Leptopoma* by the slight incision in the posterior angle of the aperture. When Mr. Theobald suggested the above name, it could scarcely have been anticipated that such a comparatively insignificant character will be accompanied by a most important structural distinction in the anatomy of the animal. Mr. Blanford, already many years past, noticed that the animal of the Barmese *Lagocheilus leporinus*† has the peculiarity of possessing a groove down the middle of the upper caudal portion of the foot. Since then I had observed the animals of *L. tomotrema*, of two new species from Penang, and of two other species from the Nicobars, and I find that all the animals possess a long glandular slit at the upper end of the foot, and that the incision in the apertural margin is the result of the presence of this pedal slit. This instance is an excellent illustration of the occasional intimate structure and the relation of the animal to its shell.

Lagocheilus, together with *Dermatocera*, has evidently among the CYCLOSTOMACEA the same systematic position, as the ZONITIDÆ have among the HELICACEA. The external character of the animal of *Lagocheilus* is accompanied by some peculiarities in the dentition and in the internal organs with which I hope to deal at some future occasion, in connection with a general account of the anatomy of the Indian CYCLOSTOMACEA.

* Guérin-Ménéville's Magasin de Zoologie, for 1838.

† Journal A. S. B. for 1865, Pl. II. p. 82.

The species which are at present known to belong to the genus are: *L. tomotrema*, Bens., (Sikkim, Assam and Cachar), *leporinus*, Blf., (Barma), *trochoides* and *striolatus* from Penang, *Wüllersdorffi*, Pfr. and Zel., and another as yet undescribed species also from the Nicobars; *scissimargo*, Bens., from Tenasserim. These localities indicate the geographical extent of the genus. Reeve in his Monograph of *Cyclophorus*, when speaking of *L. scissimargo*, says that there is more or less an indication of a notch in the aperture of *C. triliratus*, Pfr. (= *quadriflosus*, Bens.) while Pfeiffer in his second Supplement to the Pneumonopoma (p. 29) refers the latter species to *Cyclotus*.

LAGOCHIELUS TROCHOIDES, n. sp. Pl. X, Fig. 15.

L. testa turrito conica, sub-anguste umbilicata; anfractibus sex, sutura profunda simplici junctis, primis duobus concavis, ceteris supra medium angulatis, ultimo bi-angulato; omnibus cuticula opaco-fusca indutis, transversim striolatis, spiraliter striatis, striis filiformibus: duobus in anfractu penultimo supra angulam subistantibus, infra angulum 4-5 approximatis; in anfractu ultimo angulis duobus ad intercella breviter ciliatis; basi in adultis prope peripheriam et ad umbilicem, in junioribus omnino, confertim striata; testa sub cuticulosa albida, ad apicem rubescente; apertura rotundata, modice obliqua, in angulo superiore vel postico distincte incisa, bilabiata: labio interno brevior, violaceo tincto, exterioro fere plane expansiusculo, in facie concentricè striolato, ad marginem anteriorem atrato. Operculum multispicatum, tenue, corneum. Diam. maj. 10, diam. min. 8, alt. testæ 9·6, diam. apert. int. 1·2, externæ 5 m.m.

This is the largest species as yet known of the genus, the more regularly conical form, angular whorls, numerous spiral striae, absence of brown spots on the shell, etc., readily separate it from *L. scissimargo*. The fine transverse striolation of the cuticle is very easily worn off, but the spiral striation is always very distinct, and well marked even after the removal of the cuticle. Young shells have a striking resemblance to those of *Cremnoconchus Sylhædrensis*; they are comparatively more largely umbilicated than adult ones, and their cuticle is more or less distinctly olive, while in the latter it is dark brown in fresh specimens, often becoming reddish brown in dried ones.

Hab. Penang. I found the species on large stones between decaying vegetable matter at an elevation of from 200 to about 1000 feet; it is scarce.

The animal is pale grey, the body itself being slightly darker than the foot; the rostrum is long, deeply cleft in front, reddish at the base; tentacles long, and thin, dark grey, blackish towards the tips; eyes on their outer base on indistinct bulgings; a dark pedal row, moderately swollen, extends from the lower base of the rostrum to behind the operculum, from which a deep, narrow glandular slit proceeds along the middle to the end of the foot.

LAGOCHEILUS STRIOLATUS, n. sp. Pl. X, Fig. 16.

L. testa turrito conoidea, anguste umbilicata; anfractibus 5·5 convexis, sutura simplici junctis, ultimo ad peripheriam inferiorem vix angulato; apice laevigato, olivaceo; anf. ceteris cuticula fusca vel brunnea indutis, transversim oblique subdistanter, et spiraliter densissime, striolatis; basi sub-torrigata vel sub-obsolete spiraliter striatula; apertura ampla, sub-circulari, peristomate postice ad angulum profunde inciso, infra ad latus basale conspicenter producto, bilabiato, labio interno in junioribus violaceo, in adultis ad marginem attollo, externo vadique fere aequaliter planeque dilatato, corneo. Operculum tenue, corneum, multispiratum. Diam. maj. 6, diam. min. 5, alt. testæ 6·6; diam. apert. int. 2·6, ext. 3·2 m. m.

This smaller form resembles *L. tomotrema* and *leporinus*, but it is distinguished from both by a slightly larger spiral angle, rounded (not angulated) whorls, and by the very dense, filiform, spiral striation.

Hab. Penang. Under dead leaves on the ground along the base of the hills, together with the last species; rare.

Animal leaden grey, with moderately elongated, darker, cylindrical tentacles; eyes on minute bulgings, joined on the inner side to the base of the tentacles; upper posterior part of the foot with a narrow glandular slit, extending from the operculigerous lobe to the end; lateral pedal row very thin.

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Part II.—PHYSICAL SCIENCE.

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NOTES ON A COLLECTION OF BIRDS MADE IN THE ANDAMAN ISLANDS BY
ASSISTANT SURGEON G. E. DOBSON, M. B., DURING THE MONTHS OF
APRIL AND MAY,—by V. BALL, Esq., B. A.

[Read 6th, received 16th August, 1872.]

A short time ago Dr. Anderson placed in my hands for determination a collection of birds, made in the Andamans by Dr. Dobson,* subsequently adding two received from Mr. Homfray.

The collection contains 184 specimens belonging to sixty-two species, of which eighteen are new to the hitherto recorded avifauna of those Islands; but they are for the most part migratory birds (*Gallæ*), whose occurrence might safely have been predicated from their being known from the coasts on both sides of the Bay of Bengal, and to some extent from Malaya.

One species only is described in the following list as new, but there are four others presenting certain peculiarities which may hereafter justify their separation from the species under which they are now enumerated. As these are represented by single specimens, I think it undesirable to exaggerate the importance of what may ultimately prove to be only individual variations from the type. The species are: *Ephialtes spiloccephalus*, Blyth ?; *Palaornis Alexandri*, Linn.; *Brachypodius melanocephalus*, Gmel.; *Rallus striatus*, Linn. One result of the examination of this collection has been that while it supports Col. Tytler's views as to the distinctness of certain And-

* Mr. Wood-Mason and Dr. Dobson visited the Andaman Islands to collect for the Indian Museum. The vertebrate portion of the collection was under Dr. Dobson's care.

man species, it furnishes almost conclusive evidence against others being so. Mr. Blyth has already pointed out that *Spilornis Elgini*, Tytler = *S. bacha*, Bodd.; *Collocalia affinis*, Tytler = *C. Linchi*, Horsf.; *Palaornis affinis*, Tytler = ♀ *P. erythrogenys*, Blyth, and *Herodias Andamensis*, Tytler = *H. concolor*, Blyth.

In so far as the present collection afforded material, I have endeavoured to give full descriptions of those species which have hitherto only been partially described, and to amplify the information regarding others.

According to the present state of our knowledge, the avifauna of the Andamans includes 109 species; possibly this number may have to be reduced by four.* But it is made up in this way. The late Capt. Beavan's list gives 94 species from which three, viz.—*Hæmatornis Cheela*, Bodd., *Palaornis affinis*, Tytler, and *Pericrocotus Andamanensis*, Tytler, must, I think, be subtracted, and 18, the number of additional species in the present collection, added, or $18 + 94 - 3 = 109$. It should be stated, however, that five of the species mentioned by Capt. Beavan were introduced into the Islands by Col. Tytler. The number of indigenous birds should therefore stand at $100 + 4$? Of this number twelve are local species and six? are known only from the Andamans and Nicobars.

In the Nicobars there are about fifty-three species known at present, of which number seven are local.

Excepting the migratory birds, particularly the *Grallæ*, from our consideration, the bulk of the non-local species in the Andamans are Indian, and in the Nicobars Malayan.

Where there are two allied species, or two races or varieties of a species in India, the Andaman, as a general rule, corresponds with the southern form. To this rule there is an exception in the case of *Graucalus Macei* which is the northern species, *G. Layardi* being the southern. However, the Andaman bird seems to be intermediate between *G. Macei* and *Javensis* from Java which two, according to Blyth, only differ in size.

Judging from the number of species of birds known to occur in the several groups of islands in the Malayan Archipelago we may feel confident that much yet remains to be done both in the Andamans and Nicobars, before a list approaching completeness can be prepared.

The present, and to a certain extent, all previous collections were made in the vicinity of Port Blair, throughout an area, probably not exceeding 30 or 35 square miles, or by a rough estimate about one-hundredth part of the total area occupied by these islands.

* The species of *Nectarinia*, *A. alitis*, *Herodias* and *Querquedula* of Col. Tytler's and Capt. Beavan's lists may possibly be only the same species as four birds which are given under other names in my list.

Several families and genera, which all analogy would lead us to believe must find a place in the Andaman avifauna, are as yet unrepresented in any of the collections of which descriptions have been published.

The following is a list of the purely local species which are not known to occur elsewhere :

Spizæus Andamanensis, Tytler.
Muelleripicus Hodgii, Blyth.
Centropus Andamanensis, Tytler.
Graculus Dobsuni, n. sp.
Dicrurus Andamanensis, Tytler.
Dissemurus affinis, Tytler.
Myiagra Tytleri, Beav.
Oreocinclæ infra-marginata, Blyth.
Oriolus Andamanensis, Tytler.
Kittacinclæ albiventris, Blyth.
Dendrocitta Baylei, Tytler.
Temenuchus Andamanensis, Tytler.
Euryzona Canningi, Tytler.

The species found in the Andamans and Nicobars, but not elsewhere, are :

? *Ninox affinis*, Tytler.*
Palæornis erythrogenys, Blyth.
Geocichla innotata, Blyth.
Eulabes Andamanensis, Tytler.
Treron chloroptera, Blyth.
Macropygia rufipennis, Blyth.

In the following enumeration and description a dagger (thus†) prefixed, indicates that the species has not been previously recorded from the Andamans.

Fam. AQUILINA.

1. *SPILORNIS BACHA*, Daud. *H. bido*, Horsf. No. 87 of Blyth's Catalogue, *S. spilogaster*. Blyth *Hæmatornis Elgini*, Tytler.

H. Elgini, Tytler, is considered to be identical with *H. bacha* by Mr. Gurney, and both Mr. Blyth and Dr. Jerdon confirm this opinion (Ibis, N. S. IV. 1868, p. 131 and 3rd Series, 1871, Vol. I, p. 335). Dr. Jerdon writes : " It appears fully agreed on by all that the small Serpent Eagle of Ceylon and Southern India is the same as the Andaman bird."

In my previous paper, from not having seen Mr. Blyth's remarks, I entered my specimens as *Cheela*, as they had the wing longer than in Tytler's *Elgini*. In the present collection, which contains five specimens in various stages of plumage, all belong to the small species. The variations in plumage correspond with those observable in the different stages of *Cheela*,

* I am rather inclined to believe that this bird will prove to be the same as Temminck's *Strix hirsuta* which Pelzeln records from the Nicobars.

I could not see any constant characters which would serve to distinguish the two species other than that of size. Measurements of a male in inches : wing 14·2 ; tail 9·2 ; bill to gape 1·8 ; tarsus 3·4.

2. *HALLETUS LEUCOGASTER*, Gmel.

Three specimens in various stages of plumage. Length of wing of adult 20·8 inches.

Fam. STRIGIDÆ.

3. *EPHIALTES SPILOCEPHALUS*, Blyth. (?)

So far as it is possible to make out one of these difficult birds without a good series for comparison, the specimen of Andaman scops before me appears to correspond most nearly with Blyth's description of *E. spilocephalus* (= *S. Malayanus*, Hay ?) J. A. S. B. XV. p. 8, and with a specimen of that species from Masuri in the old collection, No. 147, I, of Blyth's Cat.

Mr. Hume only doubtfully refers *spilocephalus*, Blyth, to *gymnopus*, Gray, so that for the present I think it safer to give Blyth's name. The bird certainly belongs to the *pennatus* type as distinguished by Mr. Hume, though Col. Tytler records *E. Lempigi* from the Andamans.

Authorities are so divided as to the nomenclature to be adopted in reference to this genus, that without attempting to discuss the question as to what species *spilocephalus* should be finally referred to, I shall confine myself to shewing the points of resemblance between the Andaman bird and *spilocephalus*, Blyth, by the description of the former which is as follows :

Above. Rufous inclining to bay, each feather of the head, back of neck, scapulars, wing coverts, back and rump with two fawn colored spots edged with black. Primaries—first two not grown, fourth and fifth equal, five white spots on the outer webs. Tail rufous brown, darker on the inner webs of the rectrices, with four white bands.

Beneath. Facial disk fawn colour. Loral bristles black, white towards the base. Breast and abdomen finely mottled with brown and fawn or dusky white, each feather with two brownish black spots which are separated by a white bar. Tarsi covered for three-fourths of their length with short rufous colored feathers, barred with brown. Feet and claws not quite so slender as in the Masuri specimen.

Measurement in inches : wing 5·6 ; tail 3 ; tarsus 1.

Fam. HIRUNDINIDÆ.

4. *COLLOCALIA LINCHI*, Horsf. *Hirundo fuciphaga*, Thun.

Trans. Linn. Soc. XIII, p. 143, *C. Linchi* et *C. fuciphaga*, Wallace, P. Z. S. 1863, p. 384. *C. affinis*, Tytler ?

The present collection contains three specimens of *Collocalia* which appear to have been taken from the nest as the primaries are not fully grown.

They correspond in length of body and coloration with specimens of *C. fusciphaga* from Batavia and the Nicobars (Blyth's Cat. No. 429). They appear also to be the same species as that figured as *C. Linchi* in 'Reise der Novara,' Vögel, T. II, f. 2, save that the metallic lustre as represented is far too brilliant. The following is a description of our specimens.

Above. Black with dark green reflections, an indistinct white band on the rump, no spots on the tail. *Underneath.* A white rictal spot; from chin to breast cinereous, the edges of the feathers lighter, thence to vent greyish-white, feathers centered cinereous; under tail-coverts centered greenish-black. Length to end of tail 3·3, wing 2·95, tail 1·4 inches.

Col. Tytler's specimens from the Andamans, which he described as *C. affinis*, had the following dimensions:—

	Length.		Wing.		Tail.	
♂	3·75	inch.	3·52	inch.	1·36	inch.
♀	3·5	„	3·75	„	1·36	„

Fam. MEROPIDÆ.

5. *MEROPS QUINTICOLOR*, Vieil.

The collection contains six specimens of this bird.

Fam. CORACIADÆ.

† 6. *EURYSTOMUS ORIENTALIS*, Linn.

Three specimens. Is said to be common, but has not been previously recorded from the Andamans.

Fam. ALCEDINIDÆ.

7. *ALCEDO ASIATICA*, Swains. (*A. meninting*, Horsf.) Two specimens.

8. *PELARGOPSIS BURMANICA*, Sharpe. *Halcyon Gurial*, Pearson.

In this list I follow Mr. Sharpe's classification and geographical distribution of the five races of *Halcyon leucocephalus*, at the same time I feel strongly inclined to believe that a critical examination of the whole series at present in the Indian Museum will shew that it cannot stand in its integrity.

Our present specimen closely resembles some of the duller plumaged individuals of *H. Gurial* from Bengal, and also agrees to a certain extent with Sharpe's description of *Burmanica*, but differs from the figure given of that race in the following particulars: the feathers of the head and nape are much more albescent, the ochreous collar is broader and the blue of the wings and tail has no tinge of greenish. Length 13·2; wing 6, tail 4·4, bill at front 3, tarsus 6 inches.

9. *HALCYON COROMANDA*, Lath. Two specimens.

10. HALCYON SMYRNENSIS, Linn.

This resembles specimens from Southern India and Ceylon in the brilliancy of the coloration. Length 10·8, wing 5, bill at front 2·4 inches.

11. HALCYON CHLORIS, Bodd. Sharpe, Monograph of *Alcedinidæ*, p. 229. *Todiramphus collaris*, Scop.

The collection contains several specimens of this bird which is said to be one of the commonest on the Islands.

Fam. PSITTACIDÆ.

12. PALÆORNIS ALEXANDRI, Linn.?

While aware of the considerable amount of variation which *Palæornis Alexandri* is subject to, I should be disposed to claim for the Andaman bird now before me a position as a distinct species, were I able to affirm that the characters which it exhibits are constant; but on this point I have no information at present. The specimen, a male, at once attracted notice by the enormous size of its bill; and on closer examination and comparison with a good series of Indian specimens, I found that it possesses other characters which distinguish it from the Indian bird of normal plumage.

The black stripe from the lower mandible to the demicollar of peach-rose, so marked in ordinary specimens, is in this reduced to a narrow line which commences half an inch from the mandible and terminates at the first point of contact with the peach-rose, not being continued as a border to it, as it commonly is for three-fourths of an inch or so in Indian specimens. The head and cheeks, down to the collar, are of a vivid emerald green without a trace of the purplish grey or hoary bloom which is present in all Indian birds which I have examined. The dark red spot on the shoulders is smaller than usual? and the blue of the central tail feathers of a much more decided hue. The wing is somewhat shorter than in any of the Indian specimens with which I have compared it.

Dimensions of bill.	Gape to point.		Width at gape.	
	A.	B.	A.	B.
Up. mandible,	1·15 inch.	1·15 inch.	·95 inch.	·85 inch.
Lo. mandible,	·75 "	·65 "	·9 "	·8 "
Depth of both mandibles closed A. 1·7, B. 1·5.				

A is the Andaman bird, B a specimen of ordinary dimensions from the Rajmahal Hills. Should all the Andaman birds prove to have the above characters I would propose the name *P. magnirostris* for the species.

If the characters be constant, they are as sufficient to distinguish the two races as are those which distinguish the two races of *P. rosa*. I may perhaps mention that in looking through a drawer full of these latter, I found

that Cachar and Darjiling (? Terai) specimens agreed with Barmese in having the under wing coverts green, &c.

13. *PALÆORNIS ERYTHROGENYS*, Blyth.

J. A. S. B., XV, 1846, p. 23, and XXVII, 1856, p. 81. *P. Nicobaricus*, Gould, P. Z. S. p. 555. B. of Asia, 1857, Pt. IX.

Mr. Blyth (Ibis, IV, 1868, p. 132,) has pointed out that although the name *erythrogenys* has been applied to three species of this genus, in the case of two it is reduced to the rank of a synonym, and therefore his name is entitled to stand.

In my former paper I agreed with Blyth in considering Tytler's *P. affinis* to be only the female of this species. If it be not, then we might ask what is the female like? neither the present nor any previous collection contains any specimen of the red-billed birds which do not correspond exactly with authentic males.

There is one point about the female not noticed by Blyth, the moustache is deep green, not black as in the males.

Measurements in inches.				
	Length.	Wing.	Bill from gape.	Tarsus.
♂	14	6·8	·85	·55
♀	10·7	6·8	·76	·55

† 14. *PALÆORNIS JAVANICUS*, Osbeck.

Blyth writes "*P. Javanicus* differs only from *P. Fibrisca*, in the Javan bird having a red lower mandible, while the other has a black one; but in some Javan specimens the lower mandible is blackish and Mr. Gould has a specimen from Siam with a red under mandible; the Hainan birds have it black." Finsch in his Monograph '*die Papageien*' includes both under *P. Lathamii*, Finsch.

The specimen in the present collection, a male, has the under mandible black. Length 13; wing 6·8; tail 7·8; tarsus 6 inches.

15. *LORICULUS VERNALIS*, Sparrm.

Identical with Indian specimens, wing 3·5 inches.

Fam. PICIDE.

16. *MUELLERIPICUS HODGII*, Blyth.

The collection contains a good series of this bird which appears to be common. The measurements of one are somewhat different from those of my own specimen (J. A. S. B., XXXIX, p. 241): wing 6·8; tail 6·2; bill at front 1·6; tarsus 1·2 inches.

17. *PICUS ANDAMANENSIS*, Blyth.

Blyth distinguishes this bird from *P. pectoralis* by its having three pair of distinct white spots on the middle rectrices, while *P. pectoralis* has four. "But the Andaman bird is specially characterized by the large

round black spots upon its breast, each margined with whitish; the ear coverts also are longitudinally more conspicuously rayed than in the others. In other respects this bird resembles *P. macei*."

The present collection which contains five specimens shews that the number of spots on the middle tail feathers is not a constant. In three (2 ♂ and 1 ♀) there are four pairs of spots and in the remaining two (1 ♂ and 1 ♀) there are only three.

♀ Length 6·25; wing 3·87; tail 2·25; tarsus ·75 inches.

Mr. Blyth has seen this bird in a collection from Sumatra.

Fam. CUCULIDÆ.

† 18. CUCULUS MICROPTERUS, Gould.

One specimen. This bird has not been previously brought from the Andamans.

19. CENTROPUS ANDAMANENSIS, Tytler. Ibis, N. S. III, 1867, p. 321.

The collection contains four specimens. Head, neck to middle of back, chin, throat and breast rufous grey. Abdomen, thigh-coverts and under tail coverts the same with an ashy tinge. Back, rump and upper tail-coverts ashy. Wings and scapulars rufous bay. Tail brown, paling from the centre to the margins of the feathers. Bill black. Length 17 to 18; wing 7·5; bill at gape 1·7; tarsus 1·9 inches.

Fam. NECTARINIDÆ.

† 20. ARACHNECHTHRA FRENATA, Müll.?

The specimens of *Arachnechthra* hitherto received from the Andamans have been identified as *pectoralis*, and following suit in my previous paper on Andaman birds I stated that species to be "common on Mount Harriet." The birds in the present collection are distinguished from *pectoralis* by wanting the slightest trace of a metallic blue frontal patch. With the characters of *A. frenata*, Müll., given by Lord Walden in the Ibis for 1870, p. 26, they agree and the wing exactly corresponds with that of Müller's figure; but there is no trace of a maroon pectoral band represented, which though slight, is present in all our ♂ specimens. The yellow supercilium is distinctly marked. Another character which distinguishes this from *pectoralis*, and helps to separate it from several other species, is the size of the bill which closely approximates to that of *A. intermedia*, Hume.

Length 4·2; wing 2·1; bill at front ·8, tail 1·4 inches.

Fam. LANIADÆ.

21. LANIUS LUCIONENSIS, Scop.

A specimen of this bird is identical in coloration with one in the Indian Museum from Mr. Swinhoe, Amoy. It differs from the ordinary Indian

specimens of *cristatus* in the silvery white of the forehead, chin, and throat, and in the almost entire absence above of any tinge of rufous except on the upper tail coverts. Length 7·1, wing 3·5, tarsus ·95, bill at front ·5 inches.

22. *GRAUCALUS MACCI*, Lin.

The collection contains five specimens of *Graucalus*, three of which answer very closely to the characters of *G. Macci* or *G. Javensis*, being indeed of intermediate size and thus affording a link between the Indian and Javan birds which, according to Blyth, only differ in size. They have the wings white underneath, and the outer tail feathers broadly tipped with white. One specimen has the abdomen slightly barred, in the others it is simply albescent.

Length.		Wing.		Tail.		Bill from gape.		Tarsus.	
11	inch.	6·62	inch.	5	inch.	1·58	inch.	1·1	inch.
11·1	"	6·75	"	5·12	"	1·5	"	1·	"

The remaining two specimens I at first thought might be the young of the above; but closer examination convinced me that they are adults in full plumage belonging to a distinct species.

† 23. *GRAUCALUS DOBSONI*, n. sp.

So far as the literature available in Calcutta has enabled me to compare this bird with the hitherto described species of this genus it appears to be distinct. I at first supposed it might be *striata*, Bodd.=*Novæ-guinææ*, Gmel. &c., but it differs in several particulars from Lesson's description of that species. The following is a description.

Above dark slaty, darkest on the head; wings and tail brownish-black, primaries, secondaries and tertiaries lighter on the inner webs, faintly edged with white on the outer; two outer rectrices on each side narrowly tipped with dusky white; a black stripe from the lores round the eyes to the ear coverts, thence faintly continued as a collar in one of the specimens. *Underneath* white barred with black from chin to under tail-coverts inclusive; under wing-coverts similarly barred. Bill conspicuously smaller than in *G. Macci*. Length, 10·2, wing, 6·2, tail, 5·4, bill from gape, 1·23, tarsus, ·95 inch.

I have named the species after Dr. Dobson.

24. *PERICROCOTUS SPECIOSUS*, Lath.—Gould, B. of Asia, pt. IX. pl. 4.

A good series of this bird has been brought. It includes several young males with the transitional plumage. I have little doubt that *P. Andamanensis*, Tytler, is only *P. speciosus* in immature plumage. It is said to have "the plumage of *P. speciosus* with more yellow or flame-colour mingled with the scarlet. It is also apparently smaller." The amount of red on the central tail feathers of this bird varies much in specimens from various parts of India and Borneo. Four out of five males in this collection have the central tail feathers wholly black.

I have shot in Bengal and examined from other parts of India many specimens of *P. speciosus*, none approach in size Gould's figures which are said to be *life*.

25. *PERICROCOTUS PEREGRINUS*, Linn.

Andaman specimens correspond with the darker plumaged variety of this bird from Madras and Ceylon, from one of which Gould's figure is taken.

I have not seen any description of *P. flagrans*, Boie apud Bonaparte, from Borneo and Sumatra, possibly the southern form should be referred to that species.

26. *BUCHANGA (DICRURUS) ANDAMANENSIS*, Tytler.

This is, I believe, a good species, somewhat resembling *D. balicassius*,* but distinguished from that species by its large sharply keeled bill and hair-like feathers, which spring from the nostril. The bill is more like that of a *Dissemurus* than a *Dicrurus*; so much is this the case that in a former paper J. A. S. B., XXXIX, pt. II, p. 241, I was inclined to refer a very young bird of this species with the tail feathers only partly grown to the former rather than to the latter genus. I have compared it with all the specimens mentioned in Blyth's Catalogue including *edoliformis*, but it is certainly distinct from any of them.

Above and below black, with a greenish metallic gloss; primaries brown, fourth and fifth longest and equal, outer tail feathers with a slight curl upwards, under wing-coverts spotted with white lunules; no rectal spot.

Length.	Wing.	Tail.	Bill to gape.	Tarsus.
11.6	5.5	6.75	1.25	.87 inch.
10.5	5.25	6.	1.25	.87 „
11.	5.2	6.3	1.25	.8 „

27. *DISSEMURUS (EDOLIUS) AFFINIS*, Tytler et Beavan.

The late Capt. Beavan, (Ibis, N. S. III, p. 323) discussed the reasons which led him to the conclusion that the Andaman bird is distinct; since that time much has been written on the subject, but the nomenclature of the species is far from being in a satisfactory state. To start with, it is uncertain whether the three following species should be regarded as really belonging to three, two or one: *E. Rangoonensis*, Gould, *E. Malayensis*, Blyth, *E. setifer*, Temm.

Dr. Jerdon (B. of I. Vol. I, p. 438.) and Mr. Gray (Hand list, p. 287), maintain that *Malayensis* and *setifer* are identical; but Lord Walden (Ibis, 3rd Series, I. p. 174), states that the Javan *E. setifer* is distinct from *Malayensis*, and asks whether the latter is distinct from *Rangoonensis*? calling it the Barmese species. Mr. Blyth has stated (B. of I. Vol. I, p. 438), that *Rangoonensis* is not from Barma but from the Philippines, and so far

* *D. balicassius*, Linn., was obtained at sea near the Nicobars, according to Blyth.

as I can see there is no authentic case of a non-crested specimen having been obtained in Barma. There are certainly none in the Indian Museum. Several specimens collected by Dr. Williams and now in that collection are well crested and should be ranked as *paradiseus* according to Jerdon's classification. From *D. Rangoonensis*, as described by Gould, P. Z. S. 1836, the Andaman bird is distinguished by its larger bill and longer wing, if not by other characters; from *D. Melayensis* (= *setifer* ?) as represented in the Indian Museum (As. Socy. Coll.) by its very much larger size. Other doubtful species of non-crested *Dissemuri* are *D. brachyphorus*, Temm., apud Bonap., and *D. singularis*, Gray.

In the present Andaman collection there are three specimens which have only a very slight trace of frontal crest, their measurements are:

	Length to end of ordinary tail.	Wing.	Bill from gape.	Tail.	Outer T. feathers.	Tarsus.
Sex ?	12	inch. 6.2	inch. 1.45	inch. 6.2	inch. 1	inch.
♂	12	" 6.4 "	1.5	" 6.5 "	15.	1.1 "
Sex ?	13.3	" 6.5 "	1.5	" 7 "	17.	1.1 "

28. *ARTAMUS LEUCOPYGIALIS*, Gould, P. Z. S. Lon. 1842, p. 17.

Lord Walden, P. Z. S. 1866, p. 555, has identified the Andaman bird with Gould's Australian species. I have compared with it Gould's plate and can see no difference in the plumage, but the bill of the Andaman bird seems larger.

Fam. MUSCICAPIDÆ.

29. *MYIAGRA TYTLERI*, Beav.

Both Mr. Blyth (Ibis, 1868, p. 132) and Dr. Jerdon (ibid. 1872, p. 122) doubt the distinctness of the Andaman bird from the widely distributed *M. azurea*, Bodd.; but chiefly, I, believe on the ground of that wide distribution. With the specimens, 2 ♂ and 2 ♀, now before me, and not having been able to discover, in the Indian Museum, any specimens, or any published description of Indian birds shewing the same departure from the typical coloration, I am inclined to follow Capt. Beavan in his determination of the Andaman bird as distinct.

M. Tytleri, Beav., is said to "differ conspicuously in entirely wanting the black gorget on the throat of the male." (Ibis, N. S. III, 1867, p. 324). This character as suggested by an editorial footnote is only an individual peculiarity. In the two males before me, the gorgets are distinctly marked; but the other specific characters, the brighter coloration of the upper parts and the continuation of the blue of the breast to the abdomen which becomes slightly paler towards the vent, serve to distinguish this bird, if not as a species, at least as a well marked variety of *M. azurea*. The under tail coverts are white with a sky-blue tinge. The female like the male has no white on the abdomen; wings and tail brown.

	Measurements in inches.			
	Wing.	Tail.	Bill.	Tarsus.
♂	2·9	2·7	·45	·65
♀	2·8	2·7	·45	·65

*Fam. MERULIDÆ.*30. *GEOCICHLA INNOTATA*, Blyth.

One specimen. Length 7·2; wing 3·5; bill at front ·7; tarsus 1·1—
inches.

*Fam. BRACHYPODIDÆ.*31. *OTOCOMPSA JOCOSA*, Linn.

The Andaman appears to be identical with the Indian species.

† 32. *BRACHYPODIUS MELANOCEPHALUS*, Gmel. ?

One specimen in immature plumage may belong to this species. The metallic feathers of the head have not appeared. The outer edges of the primaries are yellowish green.

33. *IRENA PUELLA*, Lath. Vide Ann. and Mag. Nat. Hist. 4 Ser. Vol. V, 1870, p. 417.

The Andaman species of *Irena* corresponds with that found in Southern India (Travancore). It has the short tail coverts which, according to Lord Walden, distinguish *Irena puella* from *I. cyanea* and *I. turcosa*. The collection contains males, females, and young males in transitional plumage.

	Wing.	Tail.	Bill at front.	Tarsus.
♂	5 inches.	4 inches.	·9 inches.	·75 inches.
♀	5 "	4 "	·9 "	·75 "
Young ♂	4·9 "	4 "	·8 "	·7 "

34. *ORIOULUS MELANOCEPHALUS*, Linn. One specimen.35. *ORIOULUS ANDAMANENSIS*, Tytler.

In his last published remarks on this species (Ibis, IV, 1868, p. 132) Mr. Blyth states his belief that the Andaman *Oriole* is distinct from *Ilorsfieldi*, Bonap.; previously having relinquished his original supposition as to its identity with *coronatus*, Swainson. He considers it to be "most nearly akin to *O. macrurus* of the Nicobars, but is rather smaller." It is distinguished from *O. macrurus* not only in size but in the amount and distribution of the yellow on the wings and tail and black on the head. From *Chinensis*, it may readily be distinguished by the black on the nape being much narrower, *Indicus* having it of intermediate size.

A specimen in full adult plumage, has the wings black save the extremities of secondaries and tertiaries which are narrowly tipped with yellow, and a bar formed of yellow tips to the wing-coverts of the primaries.

The collection contains three specimens, and there are six in the old collection which were described by Blyth. Dimensions of one; length 8·8; wing 5·3; bill at front 1; tarsus ·9; tail 3·35 inches.

Fam. SYLVIADÆ.

36. *COPSYCHUS SAULARIS*, Linn.

Three specimens belonging to the Indian, not the Malaccan species (*C. Mindanensis*). A fully grown male has the four outer rectrices on either side white, this is a character according to Blyth, which distinguishes *C. saularis* from both *Mindanensis* and *Ceylonensis*.

37. *KITTACINCLA ALBIVENTRIS*, Blyth. Three specimens.

Measurements of ♂ : length 7·8 ; wing 3·55 ; bill to gape ·87 ; tarsus 9·5 inches.

38. *ARUNDINAX OLIVACEUS*, Blyth, J. A. S. B. XIV, p. 595. *A. ædon* Pallas ?

Three specimens of this not very well known bird. They correspond very closely with Blyth's original description and type specimens so far as the faded condition of the plumage of the latter admits of comparison. In dimensions, however, they are somewhat smaller :

	Length.		Wing.		Tail.		Bill at front.		Tarsus.	
A.	6·6	inch.	3·07	inch.	3·1	inch.	·55	inch.	1·03	inch.
B.		„	3·13	„	3·2	„	·53	„	1·03	„

A, is the Andaman bird ; B, a bird in the Museum labelled by Blyth. The measurements of both are less than those given in Blyth's original description and in the "Birds of India," II, p. 157. Another of Blyth's specimens on the same stand is larger than B, and more nearly corresponds with the published measurements.

Fam. CORVIDÆ.

39. *DENDROCITTA BAYLEI*, Tytler, Ibis 1863, p. 119.

A good series of this bird.

Measurements in inches.

	Length.	Wing.	Tail.	Bill to gape.	Tarsus.
♂	12·2	4·6	7·2	1·	1 " inch.
Sex ?	11·8	4·6	7·	1·1	1 " „

In my previous paper J. A. S. B. XXXIX, p. 242, "wing 2½," "was misprinted for 4½."

Fam. STURNIDÆ.

40. *CALORNIS PANAYENSIS*, Scop. = *C. cantor*, Gm. Vide Ibis, 3rd Series, Vol. I, 1871, p. 176.

The Andaman specimens (five), including both young and adults, appear to be identical with the Indian species.

41. *TEMENUCHUS ANDAMANENSIS*, Tytler.

The specimens in this collection (both ♂ and ♀) go far to establish Tytler's opinion as to the distinctness of the Andaman bird from *T. erythropygia*, Blyth, from the Nicobars. None of them shew the slightest tendency

to rufescence on the rump, upper tail coverts, under tail-coverts or tail feathers, as is so distinctly marked in the Nicobar birds.

I observe too, though I doubt its being a constant character, that the bill of the Nicobar bird is somewhat more slender and less conical than in the Andaman specimens.

♂ Wing 4·3; tail 3·2; bill at front 1·1; tarsus 1 inch.

42. *EULABES ANDAMANENSIS*, Tytler.

In my previous paper I simply confined myself to pointing out that the Andaman and Nicobar birds are identical, feeling that without a larger series for comparison, and in the state of opinion on the subject of the different races of *Eulabes*, my safest course was, to follow Lord Walden, who has pronounced the Andaman bird to be a distinct and good species. Since that time, Dr. Stoliczka has discussed the subject at length (*J. A. S. B.* XXXIX, pt. II, p. 326) and has been replied to by Lord Walden (*Ibis*, 3rd Series, Vol. I, p. 177). Dr. Stoliczka believes the Nepal, Arracan, Andaman, Nicobar, Wellesley province and Malacca birds to be "geographical races of the same species" viz., *E. Javanensis*, Osbeck.

Lord Walden maintains not only the distinctness of *intermedia* and *Andamanensis*; but from recent examination of specimens from Malacca questions their identity with the true *Javanensis* from Java.

I have before me two specimens from a dealer's collection from "the Straits" which I take to belong to the large Malacca species generally known as *Javanensis*. In these the bill is well curved and high; the naked space below the eye is quite disconnected with the wattles.

The Andaman and Nicobar specimens are smaller and have the bill lower and straighter. The bare patch underneath the eye is *not* absolutely disconnected from the wattles. So far as I can see the colour of the bill and the size of the lappets are extremely variable in specimens from the same locality. In my Nicobar specimen, the commencement of the wattles behind the eye is broader than in either of the Andamanese, but in other respects, the size and shape of the bill, feet &c., there is no perceptible difference.

Measurements in inches of a specimen in Dr. Dobson's collection.

Wing 6·3; tail 3·25; bill from gape 1·5; tarsus 1·4.

Fam. FRINGILLIDÆ.

43. *MUNIA LEUCONOTA*, Tem.

Two specimens. Feathers not striated.

Fam. TRERONIDÆ.

44. *OSMOTRERON CHLOROPTERA*, Blyth.

This bird is said to be common, the collection contains only one specimen however. There are grave suspicions that the bird-skinner made the

discovery,—and acted upon it pretty frequently—that like other green pigeons, it is very good eating. Measurement in inches: wing 6·35, bill at front ·65, tail 4·25, tarsus ·85.

45. *CARPOPHAGA SYLVATICA*, Tickell.

The identity of Andaman with Indian specimens of this bird has been fully established. The collection contains three specimens.

Fam. COLUMBIDÆ.

46. *TURTUR HUMILIS*, Temm.

One specimen. The upper parts are of a rather deeper tint than in most Indian specimens.

47. *MACROPYGIA RUFIPENNIS*, Blyth, J. A. S. B. XV, p. 371.

Three specimens, two of which, marked ♂, have the rufous of the neck, upper part of the back, breast and abdomen barred with dark brown slightly undulating lines, which are close and distinct to the breast; thence to the vent they are wider apart, broken and fainter.

In a fourth specimen which is somewhat smaller, and may be either a young bird or the female, the bars are confined to the back of the neck, and the rufous of the wing coverts, edges of the wings, throat and abdomen is of a deeper tint approaching to bay.

Mr. Blyth in his original description has pointed out the characters which distinguish this species,—the smaller size, and rufous underneath the wings—from *M. phasianella*, Gould.

The following are the dimensions of a male: length 14·15; wing 7·5; bill at front ·6; tarsus ·9 inch.

Fam. GOURIDÆ.

48. *CHALCOPHAPS INDICUS*, Linn.

Three specimens. Mr Blyth observes (Ibis, N. S. IV, 1868, p. 133): “I could perceive no difference between Andaman specimens and those from India and Barma, whereas the Nicobar race accords with the description of *C. augusta*, Bp. [*Comptes rendus*, 1855].”

Fam. GLAREOLIDÆ.

† 49. *GLAREOLA ORIENTALIS*, Leach.

The collection contains two specimens which correspond exactly with specimens in the Indian Museum from the vicinity of Calcutta (Blyth's Catalogue, No. 1543).

Fam. CHARADRIIDÆ.

† 50. *CHARADRIUS LONGIPES*, Temm.

Two specimens shot in May. In one the black of the summer plumage is beginning to appear.

† 51. *ÆGIALITIS GEOFFROYI*, Wagler.

Two specimens shot in May, have the winter plumage as described and figured by Mr. J. E. Harting (*Ibis*, 1870, p. 379):

Length.	Wing.	Bill at front.	Tarsus.
8·3	5·4	1	1·4 inch.
8·1	5·3	1	1·4 „

Col. Tytler says that he only obtained a distant view of the bird which is enumerated in Beavan's list as *Æ. pyrrhothorax* (= *Æ. mongolicus* apud Harting), so that it is not improbable that it was this species which he saw. It may have been this species too, which I observed in the Nicobars.

† 52. *EUDROMIAS VEREDUS*, Gould, P. Z. S. 1848, p. 38, B. of Australia, VI, pl. 14. Harting, *Ibis*, 1870, p. 209.

Mr. Harting's paper loc. c. enables a specimen in winter plumage to be identified with certainty. Length 8·2; wing 6·4; bill ·9; tarsus 1·8; uncovered portion of tibia ·9 inches.

*Fam. SCOLOPACIDÆ.*53. *NUMENIUS PILEOPUS*, Linn.

One specimen in the collection. The bird is said to be common in the clearings and cultivated grounds. It is enumerated in Blyth's list of Andaman birds but not in Beavan's.

It was obtained in the Nicobars by the Novara expedition, and also by myself; J. A. S. B. XXXIX, pt. II, p. 33.

† 54. *ACTITIS GLAREOLA*, Gmel.† 55. *ACTITIS HYPOLEUCOS*, Linn.

One specimen of each of the above.

*Fam. RALLIDÆ.*56. *EURYZONA CANNINGI*, Tytler, *Ibis*, 1863, p. 119.

This collection contains one specimen of the above rail which was first described by Tytler and Blyth in the *Ibis*.

Mr. Wood Mason says the bird is rather common in the grass bordering creeks. The specimen was shot near Hopetown.

Measurement: wing 6·3; tail 3·3; bill at front 1·1; tarsus 2 inches.

† 57. *RALLUS STRIATUS*, Linn.?

This bird differs from *R. striatus*, as represented in the Indian Museum (Blyth's Catalogue, No. 1671), in its longer and more powerful bill and in the abrupt termination of the rufous of the head and back of the neck, which in ordinary specimens is continued for some distance along the sides of the bluish grey of the breast. In other respects it corresponds with the common Indian bird. Wing 5·15; bill at front 1·7; tarsus 1·55 inches.

Should specimens obtained hereafter shew that the above characters are constant, it may be then determined whether the Andaman bird must be regarded as belonging to a distinct race.

The present specimen was received from Mr. Homfray.

Fam. ARDEIDE.

† 58. *ARDEA PURPUREA*, Linn.

Two specimens in immature plumage.

† 59. *HERODIAS EGRETOIDES*, Temm.

One specimen which differs slightly in measurements from those given by Jerdon: wing 11·2, bill at front 2·9, tarsus 4·4, middle claw 3·5 inches. The bill is yellow with a brown tip to the upper mandible.

Col. Tytler mentions having identified *H. garzetta* in the Andamans.

60. *HERODIAS CONCOLOR*, Blyth. *H. Andamanensis* Tytler.

Col. Tytler (*Ibis*, N. S., III, 1867, p. 333) proposed for the Andaman bird a new name in consequence of "the young being black *ab oco*, whereas those of the species for which it has been mistaken are white;" to which Mr. Blyth replied (*Ibis*, N. S., IV, 183) "*H. Andamanensis* is decidedly identical with *H. concolor* of which I never saw a white example. It also inhabits the Nicobars and Arakan."

I have carefully compared all the specimens available from the three localities and the only difference which I can discern, is that the Andaman birds are on the whole a little smaller, but one of the Nicobar birds is about the same size as the largest Andaman.

Measurements in inches.

	ARAKAN.	NICOBARS.			ANDAMANS.			
	1	2	3	4	5	6	7	8
		Rev. J. Barbe.	V. Ball, (J. A. S. B., xxxix, p. 32.)	Rev. J. Barbe.	Present Collection.	Col. Tytler.	Present Collection.	Col. Tytler, (Ibis).
Wing,	11·4	11·1	10·75	10·5	10·5	9·8	9·8	9·62—9·75
Bill at front,	3·4	3·3	3·5	3·	3·2	3·8	3·	3·
Tarsus,	3·	2·8	3·	2·8	2·7	2·4	2·6	2·25—2·37

The white on chin and throat exists in Nos. 2, 5, 6, 7 and 8? Nos. 1, 3 and 4 have no trace of it.

61. BUTORIDES JAVANICA, Horsf.

Two specimens are conspicuously smaller than any of a good series of Indian birds with which I have compared them; but correspond closely in coloration and other details of plumage. ♂ Wing 6·5; bill at front 2·4; tarsus 1·65 inches.

Fam. ANATIDÆ.

† 62. ? MARECA PUNCTATA, Cuv. Gould, Birds of Australia, vol. VII, pl. 11. *M. castanea*, Eyton.

What Col. Tytler's *Querquedula Andamanensis* may be I am unable to say, as it has not been described, and the original specimen appears to have been lost. *Prima facie* it is improbable that a local species of *Querquedula* exists in the islands. Be that as it may, the present collection contains specimens of what is commonly known as the 'teal' of the Andamans to the residents there. Except that they have a patch of white surrounding the eye and that the plumage of the head is somewhat darker, they correspond very closely with Gould's figure of *Mareca punctata*, Cuv. From his description it is evident that the plate exaggerates the bluish tinge of the velvet black speculum.

Two of the specimens shew an incipient stage towards the full breeding plumage of the male, scattered patches of bright ferruginous or chestnut appearing on the feathers of the breast and abdomen.

The occurrence of this species in the Andamans would be very interesting. It has previously only been found in Australia, Van Diemen's Land, the Moluccas and New Caledonia.

Note.—While the preceding pages were passing through the press the sad news of the death of Col. Tytler at Simla reached us. His name, so frequently mentioned above, will ever be inseparably connected with the avifauna of the Andaman Islands.

NEW BARMESE PLANTS,* (PART FIRST),—by S. KURZ, Esq.

DILLENACEÆ.

1. DILLENIA PILOSA, Roxb. Fl. Ind. II. 652, non Ham.

Arbor decidua magna; folia adulta oblongo-obovata v. elliptico-oblonga, basi attenuata, obtusa v. rotundata, brevissime (2—3 lin.) petiolata, acuta v. obtusa, obsolete repando-dentata, 10—12 poll. longa, supra glabra, subtus secus nervos magis minusve pubescentia, juniora herbacea utrinque sparse pubescentia et petiolo foliaceo-alato subamplexicaulia; flores aurei, 2—2½ poll. in diametro, solitarii ex apice ramulorum verruciformium, pedunculis c. pollicaribus pubescentibus suffulti; series interior staminum exteriori duplo longior; styli et carpella 6; carpella matura calyce aucto aurantiaco tomentello carnosio globoso circa pollicem crasso inclusa.—*Andamans.*

ANONACEÆ.

2. MILTUSA SCLEROCARPA, (*Uvaria sclerocarpa*, DC. Mém. 27).

Arbor decidua, 40—50 pedalis, novellis tenuiter adpresse sericeis; folia elliptico-oblonga ad oblonga, breviuscule petiolata, basi acuta, apiculata, chartacea, glabra; flores flavidi, dioici, 7—8 lin. longi, pedicellis brevibus gracilibus pubescentibus sustenti, fasciculos depauperatos brevissime pedunculatos axillares efformantes; sepala lineari-lanceolata, brevina, fulvo-tomentosa; petala exteriora sepalis conformia sed paullo longiora; petala interiora 7—8 lin. longa, lanceolata, obtusa, extus puberula, intus canescenti tomentosa; stamina numerosa, in toro subgloboso dense aggregata; flores feminei (cf. Hf. et Th. Fl. Ind.).—*Martaban, Tenasserim.*

MENISPERMACEÆ.

3. MELODORUM (PYRAMIDANTHE) MACRANTHUM, nov. sp.

Arbuseula 15—20 pedalis glabra gemmis fulvo-velutinis; folia oblonga v. elliptico-oblonga, crasse et breviuscule petiolata, basi acuta, 6—7 poll. longa, brevius v. longius acuminata; membranacea, glabra, nervis lateralibus arcuato-anastomosantibus, laxissime reticulata, utrinque pallide viridia; flores albi, speciosi, pedunculo pollicari puberulo suffulti, solitarii et laterales; sepala patentia, lato-ovata, 5—6 lin. longa, obtusiuscula, glabra, coriacea; petala alba flavescentia, exteriora lineari-lanceolata, sub-5-polli-

* Further particulars regarding stations, affinity of species, &c., will be given in my forthcoming *Contributions towards a knowledge of the Barmese Flora*, which I hope to have ready for publication as soon as the acquittal of other engagements allow me the necessary leisure for arranging and preparing the large materials already worked up.

caria, acuminata, basi paullulo attenuata glabra, interiora brevia, pollicem circiter longa, conniventia, lanceolata, obtusa, extus puberula glabrescentia, intus minute villosula; carpella oblique oblonga, stylo subrecurvo ovario ipso longiore terminata; stamina numerosa, linearia; connectivum capitatum.—*Andamans.*

4. *TINOSPORA NUDIFLORA*, (*Cocculus nudiflorus*, Griff. Not. Dicot. 307).

Frutex scandens deciduus, caulibus sparse tuberculatis junioribus dense subalbido-pubescentibus; folia adulta ignota, novella petiolis longis pubescentibus instructa, ovato-oblonga, basi sinuato-rotundata, breviter acuminata, subtus molliter et subalbido-pubescentia; flores feminei brunneo-lutei, solitarii, graciliter pedicellati bracteati racemos 3—4 pollicares glaberrimos in axillos foliorum delapsorum solitarios formantes; bracteolae subulatae, parvae; sepala 6, exteriora parva reflexa, interiora magna recurva; petala 6, ochraceo-lutea; staminodia totidem setacea petalis opposita; ovaria 3, toro semigloboso inserta; drupae cerasi majoris magnitudine v. majores aurantiaco-luteae, laeves et lucidae, putamen 5—6 lin. long., album, carinatum, laeviusculum nec tuberculatum, endocarpo limpido aquoso nidulans.—*Pegu, Martaban, Tenasserim.*

CAPPARIDÆ.

5. *CRATÆVA HYGROPHILA*, nov. sp.

Frutex 2—3 pedalis simplex v. 4—6 pedalis, parce ramosus, glaberrimus, cortice brunneo leucosticta; folia eadem ac in *C. religiosa*; flores solitarii axillares, parvuli?; baccæ 1—2 pollicares, oblongo-cylindricæ, longe (1—2 poll.) stipitatae, laeves, brunneae, leucostictae.—*Pegu.*

POLYGALÆ.

6. *SALOMONIA LONGICILIATA*, nov. sp.

Herbula annua ramosa, alis membraneis secus ramos ramulosque et foliorum marginibus longe albido-ciliatis, cæterum glaberrima; folia vulgo obovata, raro ovalia, semipollicem circiter longa, basi in petiolum brevissimum attenuata, superiora sæpius sessilia, obtusa et mucronulata, membranacea, 3-nervia, ciliata; flores minuti, purpurei, longius v. brevius spicati, spicis terminalibus et sæpius lateralibus; bracteolae minutæ, subulatae, sæpius persistentes; capsulae transverse oblongae, compressae, laeves (nec reticulatae), lato truncato-emarginatae, lateribus dentibus subulatis biseriatis cristatae, sursum ad sinum nude; semina nigra, nitentia.—*Pegu.*

7. *POLYGALA KARENSIUM*, nov. sp.

Fruticulus vulgo 2—3 pedalis glaberrimus; folia lanceolata ad lato-lanceolata, 4—8 poll. longa, basi in petiolum longiusculum attenuata, acuminata, membranacea, glabra, subtus glauca; flores majusculi, 6—7 lin. longi, albi, apicibus lilacinis, breve et graciliter pedicellati, racemosi, secundi; racemi terminales et axillares, glabri, 2—3 poll. longi, foliis bre-

viores; alæ carinâ paullo breviores, obovato-lanceolatae, obtusae; carina petalis interioribus duplo longior, cristata; crista biloba lobis multifidis; capsulae parvae, c. 2 lin. longae et latae, rotundatae, membranaceae, alâ duplici latâ apice profunde emarginatâ cinctae, glabrae; semina obovata, sericea, carunculo brevissimo albo suffulta.—*Martaban.*

8. *POLYGALA CARDIOCARPA*, nov. sp.

Herbula debilis glabra, habitu *P. glaucescentis*, cauli a basi vulgo cfoliato apicem versus ramoso; folia $1\frac{1}{2}$ —2 poll. longa, ovata v. oblanceolata, basi acuta v. acuminata et subdecurrentia, longiuscule petiolata, acuta, tenere membranacea, flaccidissima, glabra, subtus glauca; flores parvi, racemosi; racemi axillares et terminales, graciles; capsulae brevissime sed gracillime pedicellatae, chartaceae, ovoides, validinerves, alâ duplici latâ apicibus valde productâ et profunde emarginatâ quasi formam obcordatam assumptas.—*Tenasserim.*

HYPERICINÆ.

9. *TRIDESMIS PRUNIFLORA*, nov. sp.

Arbuseula 25—30 pedalis, decidua, trunco ramulis spiniformibus armato, novellis tomentellis; folia lineari-ad lanceolato-oblonga, juniora obovato-oblonga v. oblonga, 4—5 poll. longa, breve et gracilliter petiolata (petiolo tomentoso), basi obtusa v. acuta et nonnunquam subinaequalia, chartacea, supra asperiuscule tomentella, subtus tomentella et crasse reticulata; flores pulcherrimi, lilacini; pedicelli 3—4 lin. longi, tomentosi, 3—5-ni fasciculati v. subcymosi, supra foliorum cicatricibus orientes; sepala fulvescenti tomentosa; petala limbriata, glandulae oblongae, feretes, obtusae; phalanges planae, basin versus latiusculae, filamentis supra medio liberis; capsulae oblongae, acutae. (*Cratoxylon pruniflorum*, Kurz, MS. olim).—*Barma.*

10. *CRATOXYLON NERIFOLIUM*, n. sp.

Arbor decidua, 40—50 pedalis, glaberrima; folia lanceolata v. elliptico-lanceolata, c. 4 poll. longa, brevissime petiolata v. sessilia, basi sub-sagittata, glabra, acuta v. obtusiuscula, subtus pallida et distincte reticulata; flores parvi, pedicellis brevissimis, 3—2-ni cymosi, pedunculi breves compressi terminales et vulgo in paniculam longiusculam glabram collecti; sepala oblonga, obtusa, coriacea, glabra; petala c. 3—4 lin. longa, rotundata; phalanges planae, filamentis a medio liberis; glandulae hypogynae ovarii longitudine, carnosae, clavatae, obtusae; capsulae sepalis paullo longiores, ovatae.—*Chittagong, Pegu, &c.*

GUTTIFERÆ.

11. *GARCINIA SUCCIFOLIA*, nov. sp.

Arbor 30—35 pedalis, glaberrima; folia lanceolata ad oblanceolata, c. 2—4 poll. longa, breviuscule sed gracillime petiolata, basi acuta,

carnecente-herbacea (succo salino acido), vulgo acuta, glabra, nervis subtilibus secus margines anastomosantibus; flores albi, parvi, solitarii v. terni, 2—3 lin. in diametro, breve crasseque pedicellata, terminales v. axillares; flores masc.: sepala 2 interiora petalis majora et tenuiora, nervosa; stamina numerosa, antheris oblongis marginatis planis 2-ocularibus, in phalange erectâ brevi (lobatâ ?) subsessilibus; fl. fem. et fruct. ignoti.—*Pegu, Martaban.*

TILIACEÆ.

12. GREWIA RETUSIFOLIA, nov. sp.

Frutex 3—4 pedalis, velutino-tomentosus; folia obovata v. subobcordata, v. obcordato-ovalia, 2—3 poll. longa, brevissime petiolata, profunde retusa cum denticulo, argute duplicato-serrata, subcoriacea, supra minute et scabriuscule tomentella, subtus dense canescenti v. flavescenti tomentosa; flores pedunculi breves, solitarii, axillares, hirsuti; torus brevis, dense hirsutus; drupæ rubicundæ, sparse hirsutæ, glabrescentes, pisi magnitudine, 2-lobæ lobis pyrenam solitariam 2-locularem includentibus.—*Pegu.*

13. ELÆOCARPUS GRANDIFOLIUS, nov. sp.

Arbor novellis fulvo v. ferrugineo-tomentosis; folia largissima, 1—1½ pedes longa, obovato-oblonga v. ovalia, petiolis crassissimis 4—6 lin. longis tomentosis suffulta, basin versus subattenuata et sæpius subdecurrentia v. rotundata, membranacea, acute v. breve acuminata, minute et remote serrato-dentata, subtus præsertim secus nervos pilosula, supra glabra et subnitentia; flores majores, pedicellis ½—1 poll. fulvo-tomentosis, in racemos fulvo- v. ferrugineo tomentosos collecti; sepala linearilanceolata, ferrugineo-tomentosa, semipollicaria; petala paullo longiora, extus ferrugineo-pubescentia, bilida, lobis fimbriato-fissis; antheræ numerosæ, graciles, filamentis longiores in aristam antheræ loculorum longitudine desinentes; ovarium dense pubescens; drupæ pollicares, compressiuscule oblongæ, fulvo-puberulæ; putamen compressiusculum, rugosum.—*Pegu, Martaban, Tenasserim.*

LINEÆ.

14. ERYTHROXYLON KUNTHIANUM, nov. sp.

Arbor glabra; folia 3—4 poll. longa, oblongo-lanceolata, basi obtusa, breve et graciliter petiolata, breve et obtuse acuminata, raro obtusa, integra, chartacea, subtus glauca; stipulæ subulatæ; flores parvi, albi, pedicellis 6 lin. longis sursum incrassatis suffulti, vulgo bini in foliorum axillis v. supra cicatricibus petiolorum delapsorum; petala oblonga, ligulâ magnâ bilidâ; stamina alternatim breviora, filamenta basibus latis cum staminum tubo coherentia; ovarium ovatum; styli 3, breves et crassi, a basi liberi; drupæ monospermæ, elliptico-ovales.—*Martaban.*

*RUTACEÆ.*15. *ATALANTIA LONGISPINA*, nov. sp.

Arbuseula spinis 1—1½ pollicaribus rectissimis cylindricis horride armata, glaberrima; folia elliptica v. elliptico-oblonga, petiolis glabris 2—3 lin. longis inarticulatis, 3—4 poll. longa, acuta v. obtusa, glabra; flores solitarii v. bini in foliorum axillis, parvi, brevissime pedicellati (pedicellis glabris); calyx glaber, 5—dentatus; ovarium verosimiliter glabrum, 3—angulare, in stylum brevem attenuatum; baccæ (immaturæ) pruni magnitudine, ovatæ, acuminatæ, toro brevi suffultæ.—*Pegu, Martaban.*

*OCHNACEÆ.*16. *OCHNA ANDAMANICA*, nov. sp.

Arbuseula decidua, glaberrima; folia oblonga, v. elliptico-lanceolata, c. 4—5 poll. longa, brevi-petiolata, acuta et mucronata, setaceo v. subtiliter serrulata, chartacea, supra nitentia; flores speciosi, aurei, pedicellis gracilibus breviusculis demum elongatis articulatis; pedunculi brevissimi simplices in ramulis lateralibus efoliatis terminales; filamenta antherarum longitudine v. paulum longiora; petala 5, sepalis paullo longiora, obovata, in unguem latam sensim attenuata; calycis fructigeri sepalia omnia erecto-conniventia; styli apice omnes liberi et patentes.—*Andamans.*

17. *OCHNA FRUTICULOSA*, nov. sp.

Frutex pygmaeus, 1—3 pedalis, glaberrimus, deciduus; folia vulgò cuneato-oblonga ad oblongo-lanceolata, circ. 4—5 poll. longa, acuminata, acuta v. sub-obtusa, basi in petiolum brevissimum attenuata, chartacea, argute serrata; flores speciosi, aurei, pedicellis longioribus v. brevioribus supportati; pedunculi omnino reducti v. breves simplices s. ramosi; petala 5, obovata, unguiculata; filamenta antherarum longitudine; stylus sepalorum longitudine v. paullo longior, gracillimus, filiformis; stigma minutum, truncatum; calycis fructigeri sepalia erecto-conniventia.—*Pegu.*

*BURSERACEÆ.*18. *CANARIUM EUPHYLLUM*, Kurz (in Andam. Rep. Append. B. 4).

Arbor magna, glabra; folia 2—3 ped. longa, impari-pinnata, glabra; foliola 9—10 poll. longa opposita pinnulis inferioribus minoribus, oblonga v. ovato-oblonga, basi oblique rotundata, abrupte apiculata, longiuscule petiolulata, chartacea, serrulata, nitentia, glabra, inter nervos utrinque 12—9 laterales valde reticulata; stipulæ nullæ?; flores majusculi, albi, breve et distanter racemulosi, in paniculam 1½ ped. longam axillarem glaberrimam collecti; calyx 3—fidus, lobis latis obtusiusculis; petala 3, lanceolata, acuta, crassiuscula, ½ poll. circiter longa, extus tomentella; glandulæ hypogynæ 6, ellipticæ, obtusæ, geminatim coherentes, luteæ; stamina 6, filamentis basi coherentibus; stylus simplex; drupæ....—*Andamans.*

19. *CANARIUM* ? *COCCINEO-BRACTEATUM*, (Kurz in Andam. Rep. Appendix B. 4).

Arbor mediocris, novellis fulvo velutinis ; folia impari-pinnata, 1—2 ped. longa, glabra ; foliola 3—4-juga, 5—7 poll. longa, opposita, breviuscule petiolulata, oblonga v. ovato-oblonga, basi inequali-obtusa, in eademque arbore integerrima et setaceo-serrulata, acuminata, sub-coriacea, glabra, subtus inter nervos utrinque 10 laterales laxè reticulata, stipulae majusculae, profunde bilidae et iterato fissae, segmentis rigidis grosse dentatis puberulis ; flores (in alabastro) paniculas axillares coccineas tomentellis terminales efficientes ; bractee oblongae, acutae, tomentellae, coccineae.—*Andamans.*

MELIACEÆ.

20. *SCHIZOCHITON GRANDIFLOBUM*, nov. sp.

Arbor mediocris novellis velutino-tomentosis v. pubescentibus ; folia alterna, abrupte pinnata, raro impari-pinnata, rhachide dense fulvescenti-tomentosa ; foliola 4—6-juga, hinc inde cum impari, opposita v. subopposita, breve crasseque petiolulata, oblonga v. oblongo-lanceolata, breve acuminata, integra v. subintegra, 6—10 poll. longa, supra (nervis exceptis) glabrescentia, subtus molliter pubescentia ; flores mediocres, c. 6 lin. longi, subsessiles et bracteolis lato-oblongis dense fulvo-pubescentibus sustenti, racemosi, paniculas longe pedunculatas graciles dense fulvo-tomentosas axillares formantes ; calyx campanulatus, dense pubescens, obsolete 4-dentatus ; petala (teste Wight et Arn. saepe 6) apicibus imbricata, circ. 6 lin. longa, dense pubescentia ; staminum tubus basin versus petalis adnatus, parce pubescens, apice crenato 6—7-lobatus, lobis truncatis oblongis et integris ; antherae 6 v. 7 ; ovarium stylusque fulvo-pubescentes ; capsulae 3-lobae et pyriformes, circ. $1\frac{1}{4}$ poll. longae, pericarpio crasse coriaceo lutescente, 3-valves ; semina solitaria, magna, arillo completo aurantiaco.—*Martaban, Tenasserim.*

21. *WALSURA HYPOLEUCA*, nov. sp.

Arbor mediocris novellis minute puberulis ; folia impari-pinnata, glaberrima, rhachide levi v. sparse lenticellata ; foliola bijuga cum impari, petiolulis 1—(terminalibus 2— $2\frac{1}{2}$ —) poll. longis glabris, elliptico ad oblongo-lanceolata, 6—8 poll. longa, basi obtusa v. acuta, chartacea, glabra, obtusiuscule et breve v. longiuscule acuminata, subtus glauca, inter reticulationes levia (nec albido-tessellata) ; flores parviusculi, albi, pedicellis 1—2 lin. longis puberulis suffulti paniculam corymbosam sessilem v. subsessilem puberulam axillarem formantes ; calyx puberulus, lobis oblongis obtusiusculis ; petala 5, hinc inde ad 8 augmentata, lineari-lanceolata, acuta, puberula, 2 lin. fere longa ; stamina 10, nonnunquam usque ad 15, omnia libera ; filamenta linearia, aequilata, antheris multo angustiora, integra, villosa ; discus cras-

sus, ruber; ovarium inmersum, dense fulvo-tomentosum; bacæ immaturæ canescenti-velutinae, oblongæ, acuminatæ.—*Andamans.*

22. *WALSURA (HEYNEA) PUBESCENS*, nov. sp.

Arbusecula gracilis, 25—30 pedalis, novellis molli-pubescentibus; folia impari-pinnata, rachide terete pubescente; foliola 4-juga cum impari, brevius v. longius petiolulata (petiolulis pubescentibus), ovato-oblonga v. oblonga, basi nonnunquam parum inæquali acuta v. rotundata, 3—5 poll. longa, breve acuminata, integra et vulgo undulata, membranacea, subtus molliter flavescenti pubescentia; flores parvi, albi, pedicellis brevibus pubescentibus sustenti, paniculam longe pedunculatam corymbosam brachiatam axillarem formantes; calyx pubescens; petala circ. lin. longa, extus pubescentia; staminum tubus fere a medio liber, filamentis latis, glaberrimis, apice bifidis; capsulæ cerasi minimi magnitudine, globosæ v. ovoideæ, glabræ, rubræ, bivalves, semen unicum arillo (albo?) indutum foventes.—*Martaban.*

23. *CEDRELA MULTIJUGA*, nov. sp.

Arbor elegans, 70—90 pedalis, novellis minute fulvescenti-puberis; folia usque ad 3 ped. longa, impari-pinnata, petiolis teretibus junioribus puberulis; foliola 12—15 juga cum impari, alterna, petiolulis 2—3 lin. puberulis suffulta, ovato-lanceolata ad lanceolata, subobliqua, basi inæquali rotundata, 5—6 poll. longa, acuminata, membranacea, integra; flores parvi, albi, pedicellis semi-lineam longis suffulti, paniculam strictam glabram racemose-contractam formantes; petala et sepala 5, urceolato-convergentia, oblongo-lanceolata, acutiuscula, hæc $1\frac{1}{2}$ —2 lin. longa, minute ciliolata; stamina 10, libera; ovarium 10-sulcatum.—*Pegu.*

CHAILLETACEÆ.

24. *CH. HELFERIANA*, nov. sp.

Frutex scandens? novellis flavescenti— v. canescenti-puberulis; folia elliptico-oblonga v. oblonga, petiolis 3—4 lin. longis canescenti-tomentosis, breve acuminata, basi acuta v. obtusa, integra, pergamacea præsertim dum juvenilia subtus secus costam marginesque adpresse pubescentia, nervis lateralibus tenuibus et inconspicuis; flores parvi, pedicellis brevibus et canescenti-pubescentibus, in cymulas v. corymbos parvos axillares canescenti-pubescentes pedunculo $\frac{1}{2}$ —1 pollicari crasso libero supportatos collecti; sepala petalq 2 extus sericea.—*Tenasserim.*

OLACINÆÆ.

25. *ANACALOSA PUBERULA*, nov. sp.

Frutex magnus, glaber; folia 6—8 poll. longa, breve petiolata, oblonga ad ovato- et elliptico-oblonga, acuminata, basi acuta, integra, coriacea, glabra; flores parvi, pedicellis brevibus strictis puberulis, c pedunculo conico v. globoso brevi crasso minute bracteato orientes; calyx fulvescenti-puberulus; drupæ....—*Andamans.*

26. *CANSJERA PARVIFOLIA*, nov. sp.

Partes novellæ, folia et inflorescentiæ pilis furcatis tomentellæ v. puberulæ; folia vulgo pollice breviora, ovata, basi rotundata v. obtusa, coriacea, emarginata v. obtusa, integra, utrinque petiolusque brevis tomentella; flores parvi, sessiles, calyce magis distincto, spicas breves axillares formantes; corolla puberula.—*Tenasserim.*

27. *STEMONURUS TOMENTELLUS*, nov. sp.

Ramuli, petioli et inflorescentiæ fulvescenti-tomentellæ; folia 6—7 poll. longa, longiuscule et graciliter petiolata, oblongo—v. elliptico-lanceolata, abrupte et obtusiuscule acuminata, basi acuta, subcoriacea, integra, subtus puberula; flores parvi, sessiles, cymas 3—4-tomas, dense tomentosæ, longiuscule pedunculatas axillares formantes; calyx hirsutus; corolla glabra; filamenta sursum elevata.—*Barma.*

28. *STEMONURUS* ? *CRASSIPES*, nov. sp.

Arbuseula 25—30 pedalis, glaberrima; folia 5—7 poll. longa, lanceolata ad oblongo-lanceolata, basi acuminata, petiolo 4—5 lin. crasso suffulta, obtusiuscula, pergamacea, glabra, opaca, subtus obscure colorata; flores parvi, pedicellis lin. longis, in cymas brevissimas (petioli longitudine) glabras paucifloras axillares collecti; calyx coriaceus, cupularis, obsolete dentatus; drupæ immature obovatæ, pedunculo crassissimo 2—3 lin. longo sustentæ, apice truncato disco prominenter acuminato terminatæ, basi calycis limbo rupto angusto circumdatæ.—*Pegu.*

29. *APODYTES ANDAMANICA*, Kurz in Andam. Rep. Append. B. 5.

Arbuseula glabra gemmis sparse puberulis; folia 7—8 poll. longa, breviuscule petiolata, elliptico-oblonga v. oblonga, acuminata, basi obtusa v. acuta et sæpius sub-obliqua, coriacea, glabra, opaca; flores parvi, subsessiles cymas breve et crasse pedunculatas densas puberulas axillares formantes; calyx puberulus, obsolete 5- raro 6-dentatus; petala extus puberula, lanceolata, apicibus acutis incurva; stylus brevis vix excentricus; drupæ semi-baccatæ, pollicem circiter longæ; nux lignoso-fibrosus, ovato-oblongus, plano-convexus et subnavicularis, acumine inflexo terminatus, appendice crasso carnosio albo nucis superficiem totam planam obtegente; semina elliptica, compressa.—*Andamans.*

30. *SARCOSTIGMA EDULE*, (*Chailletia edulis*, Kurz in And. Rep. App. B. 6).

Frutex scandens, glaber; folia elliptica ad oblonga, breviuscule petiolata, basi obtusa, coriacea, obtusiuscule apiculata, integra, glabra, utrinque crasse et eleganter reticulata; racemi ferrugineo-tomentosi; drupæ inæquali-oblongæ, compressiusculæ, obtusæ, aurantiacæ, dense tomentellæ, pulpa tenui dulciusculo edibili.—*Andamans.*

31. *YODES BRANDISII*, nov. sp.

Frutex scandens tomentellus; folia 6 poll. longa, elliptico-oblonga, basi

obtusa, petiolis longiusculis gracilibus tomentosis, acuminata et costa excurrente mucronata, integra, membranacea, subtus inter nervos prominenter et laxe reticulata, supra secus nervos subtusque totâ paginâ tenui-tomentosa et viridia; flores minuti, tomentosi, pedicellis brevibus sed gracilibus, paniculas laxas tomentosas geminas sub-oppositifolias formantes; panicula una alterave v. ejusdem ramulus in cirrhum tortuosum transmutatus; fructus....—*Tenasserim.*

ILICINEAE.

32. ILEX GAULTHERLEFOLIA, nov. sp.

Frutex glaber; folia lineari-lanceolata, basin versus attenuata v. cuneata, breve crasseque petiolata, acuta, $3-3\frac{1}{2}$ poll. longa, coriacea, serrata, nervis subtus conspicuis, glabra; flores minuti, pedicellis glabris gracilibus, cymas breves graciles axillares petiolorum longitudine formantes; calyx 5-lobatus, lobis lato-oblongis, obtusiusculis; petala rotundata; stamina 5, filamentis gracilibus, cum petalis alternantibus; drupæ....—*Tenasserim.*

CELASTRINEAE.

33. EVONYMUS CALOCARPUS, nov. sp.

Frutex? glaber, ramulis teretibus; folia textura et coloratione iis generis *Microtropis* simillima, elliptica v. oblongo-lanceolata, petiolis 3—4 lin. longis, breve et obtusiuscule acuminata, integra, subcoriacea, 4-6 poll. longa, subtus pallida; flores...; capsulae cerasi fere magnitudine, pedunculo glabro brevi suffultæ v. subsessiles, vulgo obsolete 4-lobæ et 4-valves, læves; semina in loculis solitaria arillo rubescente induta.—*Tenasserim.*

34. EVONYMUS (GLYPTOPETALUM) SCLEROCARPUM, nov. sp.

Arbuscula 8—12 pedalis cortice rubra, glaberrima; folia oblonga ad elliptico-lanceolata, petiolis 3—4 lin. longis crassis, basi acuminata, 6—8 poll. longa, coriacea, serrata, acuminata; flores virescenti-purpurei, pedicellis longis gracilibus instructi, cymas pedunculatas laxas glabras solitarias v. per plures in foliorum axillis v. supra eorum delapsorum cicatricibus orientes formantes; sepalæ alba, lato-orbicularia; petala suborbicularia, concava, extus viridia, intus virescenti-purpurea exappendiculata; stamina 4; antheræ in disco lato obsolete 4-gono subsessiles; stigma sessile, obsolete 4-gonum; capsulae subglobosæ v. bilobæ, pisi majoris magnitudine, rimosæ, et verruculoso-scabræ; arillus sanguineus.—*Pegu.*

35. LOPHOPETALUM WALLICHII, nov. sp.

Arbor magna, glaberrima; folia oblonga ad elliptica, raro ovato-oblonga, petiolis 1— $1\frac{1}{2}$ pollicaribus, obtusa v. obtusiuscula v. acuta, basi rotundata, 4—6 poll. longa, integerrima, supra glaucescenti-viridia et nitentia, subtus opaca et inter nervos conspicuos laxè reticulata; flores c. 3 lin. in diametro, pedicellis 2— $2\frac{1}{2}$ lin. longis albis glabris instructi; paniculæ

axillares et terminales rigidiusculæ, virescenti-albidæ; petala virescenti-alba, nuda et integra; discus magnus, carnosus, luteus; stamina 5, deflexa, disco inserta; ovarium triquetrum, sanguineum; capsulae c. 1 poll. longæ, v. longiores, 2 poll. latæ, 3-lobæ et 3-valves, valvis lævibus; semina compressa, imbricata, cum ala 2—2½ poll. longæ, oblongæ, alâ elliptico-oblongâ membranaceâ complete circumdata.—*Burma.*

36. *HIPPOCRATEA FUSCESCENS*, nov. sp.

Frutex ? glaber; folia oblongo-lanceolata v. oblonga, petiolis crassis 4—5 lin. longis, breve acuminata, basi acuta, 2½—3 poll. longa, coriacea, obsolete crenato-serrata, glabra, supra nitentia, in siccò fuscescens v. nigrescens; panicula cymosæ, glabræ, a basi ramosæ v. pedunculatæ axillares, foliis paulo breviores; flores parvi, circ. 2 lin. in diametro, pedicellis 1—1½ lin. longis, sepala minute crosso-ciliata; petala obovato-oblonga, concava, basin versus attenuata, lineam circiter longæ, imbricata; antheræ 3, filamentis reflexis brevissimis disco elevato insertis; carpella....—*Tenasserim.*

37. *SALACIA GRANDIFLORA*, nov. sp.

Frutex scandens, glaber, ramulis teretiusculis; folia elliptica ad elliptico-oblonga, apiculata, basi acuta, petiolis ½—¾ poll. longis crassissimis, integra et marginibus parum revolutis, 8—9 poll. longæ, subcoriacea, glabra, utrinque nitentia, in siccò fuscescens; flores conspicui; pedicelli crassi, 2 lin. longi, 2—4-ni, e tuberculis minute bracteolatis axillaribus v. lateralibus orti; sepala lato-rotundata, glabra, lin. circiter longæ; petala sessilia, rotundata, 3—4 lin. longæ; stamina 3, disco intus inserta, filamenta brevissima dilatata et reflexa; ovarium læve; stylus brevis; baccæ....—*Tenasserim.*

38. *SALACIA FLAVESCENS*, nov. sp.

Frutex ? glaber, ramulis teretiusculis; folia lanceolata, opposita v. alterna, petiolis 3—4 lin. longis crassis, utrinque acuminata, integra v. obsolete crenata, marginibus parum revolutis, tenuiter coriacea, 4—5 poll. longæ, glabra, supra nitida, subtus pallida, in siccò lutescens; flores minuti, albi? pedicelli 1—2 lin. longi, e tuberculis axillaribus v. lateralibus minute bracteatis orti; sepala oblongo-lanceolata, obtusiuscula; petala ¾ lin. longæ, oblonga, obtusa; antheræ 3; filamenta disco intus inserta, brevissima, dilatata; ovarium læve; baccæ....—*Tenasserim.*

RHAMNEAE.

APTERON, nov. gen.

Calyx 5-fidus, tubo brevi obconico, lobis patentibus acutis. Petala 5, obovata, minuta, inter calycis lobos inserta. Stamina 5, petalis paullo longiora; filamenta filiformia. Discus planus, liber. Ovarium disco immersum, subglobosum, 2-loculare; stylus brevissimus, stigmatibus 2 brevibus. Dru-

pa (?) globosa, *Gouanie* more calyce aucto inclusa eidemque adnata, apice limbo coronata, abortu 1-locularis, monosperma ? semina. ... Frutex scandens foliis serrulatis penninerviis. Flores parvi, fasciculati, paniculas racemosas formantes.

39. *APTERON LANCEOLATUM*, nov. sp.

Frutex magnus scandens, novellis tomentellis; folia lanceolata, petiolis 2—3 lin. longis crassis puberulis glabrescentibus, longe et obtusiuscule acuminata, serrata, chartacea, secus nervos fulvescenti-pubescentia mox glabrescentia, 4—5 poll. longa, utrinque nervis lateralibus numerosis (7—9) prominentibus percursa; flores parvi; pedicelli graciles v. crassiusculi, 1 lin. longi, puberuli, fasciculati v. subsolitarii, racemosi et paniculas terminales et axillares canescenti- v. flavescenti-tomentosas formantes; calyx dense v. parce puberulus, circiter $1\frac{1}{2}$ —2 lin. in diametro; ovarium pubescens, stylo brevi bifido terminatum; drupa (?) adhuc nimis immatura globosa, grani piperis magnitudinis, calyce aucto glabrescente limbo calycis coronato usque ad apicem fere inclusa.—*Tenasserim*.

40. *SMYTHEA* ? *CALPICARPA*, nov. sp.

Frutex scandens ? ramulis fulvo-pilosis; folia lanceolata, petiolis $\frac{1}{2}$ —1 lin. longis crassis magis minusve pilosis, acuminata, serrata, chartacea, 4—3 $\frac{1}{2}$ poll. longa, subtus secus costam pilosa, caeterum glabra; flores...; capsulae (immatura) 1 $\frac{1}{4}$ poll. longae, oblongae, apice oblique truncatae, folliculis *Calpicarpi* non absimiles, dense fulvescenti pubescentes, coriaceae.—*Tenasserim*.

41. *COLUBRINA PUBESCENS*, nov. sp.

Frutex scandens, habitu omnino *C. Asiatica*, novellis dense fulvo-pubescentibus; folia *C. Asiatica* sed juvenilia dense fulvo-pubescentia magis minusve glabrescentia; flores parvi, viridiusculi, pedicellis lin. longis gracilibus pubescentibus, cymas breves robustas fulvo-pubescentes axillares efformantes; semina minora, compressa.—*Pegu*.

AMPELIDEÆ.

42. *VITIS ERYTHROCLADA*, nov. sp.

Frutex alte scandens, ramulis teretibus fulvis novellisque parce pubescentibus; folia decidua, digitatum—5-foliolata, petiolis 4—5 pollicaribus glabris instructa; petiolulis 1—2 pollicaribus glabris gracilibus, lato-obovato-oblonga, 4—6 poll. longa, breve acuminata, basi acuta, serrata, membranacea, novella subtus secus nervos parce pubescentia mox glaberrima; cirrhi bifidi; stipulae...; flores parvi, virescenti-flavi, pedicellis 1 $\frac{1}{2}$ —3 linearibus puberulis suffulti, cymulosi, cynam axillarem dichotomo-ramosam breviusculam laxam puberulam magis minusve glabrescentem formantes; calyx brevis, puberulus; petala et stamina 4; stylus simplex, subulatus; baccæ globosæ, cerasi magnitudinis.—*Pegu, Martaban*.

43. *VITIS ASSIMILIS*, nov. sp.

Frutex alte scandens, glaber, ramis teretibus tuberculatis; folia petiolis teretibus 1—1½ poll. longis, constanter 3-foliolata; foliola petiolulis (—1 lin. long.) crassis instructa, oblongo-lanceolata (lateralia obliqua et altero latere basi rotundata) 3—4 poll. longa, acuta, crenato-dentata, coriacea, glabra; flores parvi, virescenti-albi, hermaphroditi, pedicellis lin. longis crassis dense fulvo-pubescentibus suffulti, cymam axillarem breve pedunculatam sæpius nutantem ramosissimam puberulam efformantes; petala 4; ovarium sursum in stylum brevem crassum attenuatum, stigmata 4, brevina, patentia.—*Martaban*.

44. *VITIS CAMPYLOCARPA*, nov. sp.

Frutex alte scandens, glaberrimus, ramis teretibus et cirrhis crassis oppositifoliis; folia digitatim 5—(—7?) foliolata, petiolis 2—3 poll. longis levibus; foliola petiolulo ½—1½ pollicari geniculatim inserta, obovata, basi acuta sub-decurrentia (lateralia sub-obliqua), 4—6 poll. longa, abrupte acuminata, remote et leviter crenato-dentata, succulente coriacea, glabra; flores, ... in cymam dichotomo-ramosam brevissime pedunculatam v. subsessilem glabram axillarem collecti; baccæ oblongæ, ½ poll. fere longæ, subcurvatae, læves et lucidæ, pedicellis lin. longis suffultæ, semen solitarium coffeiforme sulcatum transverse lineatum includentes.—*Pegu*.

45. *VITIS WALLICHII*, nov. sp.

Caulis teretiuseculus, subherbaceus, glaber; folia simplicia, petiolis 2—3 pollicaribus glabris subangulatis, cordato-oblonga v. oblonga, basi 5-nervia, subtriloba, acuta, setaceo-serrata, membranacea, subtus in nervis parce puberula, 6—7 poll. longa; cymæ axillares, parviuseculæ, foliis multo breviores, pedunculatæ et pauciramæ, glabræ; flores...; baccæ pisi minoris magnitudine, globosæ, longe (4—5 lin.) et crasse pedunculatæ, monospermæ.—*Ava*.

46. *LEEA PUMILA*, nov. sp.

Herba perennis pumila simplex dense fulvo-v. cinereo-pubescentia; folia imparipinnata, adhuc juvenilia dense pubescentia; rachis et petiolus teretes, crassi; foliola juniora bijuga cum impari, petiolulis brevissimis crassis teretibus, ovato-oblonga, serrata, plicata, utrinque dense pubescentia v. subtomentosa; stipulæ magnæ, petiolo adnatæ, angustæ, extus tomentosæ; cymæ breves et compactiusculæ, pubescentes, subsessiles v. pedunculo terete dense pubescente suffultæ, breviter ramosæ; flores (in alabastro) subsessiles; calyx tomentosus; petala extus puberula.—*Pegu*.

*SAPINDACEÆ.*47. *CUPANIA FUSCICULA*, nov. sp.

Arbor, partibus omnibus puberulis; folia vulgo abrupte pinnata v. impari pinnata; rachis ferrugineo—tomentosa, exalata; foliola c. 4 poll.

longa, alterna, inaequalia et subfalcata, oblongo-lanceolata, basi in petiolo brevissimo crasso subdecurrentia, apiculata, integra, chartacea, in siccio fusciscentia v. nigrescentia, utrinque (praesertim subtus) puberula; flores parvi, paniculas axillares ramosas ferrugineo-tomentosas folio breviores formantes; sepala oblongo-rotundata, ciliata et plerumque sparse hirtula; petala lato-oblonga, ciliata, squama supra ungue instructa bilida, intus lanata; stamina vix exserta; capsulae....—*Tenasserim.*

48. *CUPANIA GLABRATA*, nov. sp.

Arbuseula glabra, 25—30 pedalis; folia abrupte pinnata, brevius petiolata, glaberrima et lucida; foliola vulgo bijuga, lanceolata v. oblongo-lanceolata, utrinque acuminata, 4—7 poll. longa, integra, subcoriacea, laxe sed prominenter reticulata; flores parvi, albi, pedicellis lin. longis instructi, pauci fasciculati, paniculam axillarem glabram simplicem v. compositam racemiformem efformantes; sepala 5, rotundato-obovata, exteriora 2 majora lin. fere longa, glabra, villosa-ciliata; petala totidem, c. $\frac{1}{2}$ lin. longa, spatulato-linearia, extus glabra, intus dense albo-lanuginosa; ovarium fulvescenti-hirsutum.—*Pegu, Martaban,*

49. *NEPHELIUM GRIFFITHIANUM*, nov. sp.

Arbor, gemmis fulvescenti-velutinis; folia glabra, impari-pinnata, petiolis glabris 2—3 poll. longis glaucescentibus; foliola 3—4 juga cum impari, breve petiolulata, ovato-oblonga ad oblonga, basi inaequali obtusa v. subobtusa breve acuminata, chartacea, subtus glauca, reticulatione utrinque conspicua et prominente; flores...; fructus (racemosi teste Griffithii) abortu 1-lobati, subsessiles, oblongi, ovi gallinacei parviusculi magnitudine, muricibus angulato-compressis conicis $\frac{1}{2}$ poll. fere longis tecti, semen unicum magnum arillo succulento albo indutum includentes.—*Ava.*

ZOLLINGERIA, nov. gen.

Calyx 5—partitus, sepala decidua, inaequalia, imbricata, interiora 2 majora. Petala totidem, subunguiculata, basi squamâ obtusa petalorum dimidio breviori lanuginosa instructa. Stamina 8, disco obsoleto intus inserta; filamenta non exserta, longa et gracilia; antherae ovales, 2-loculares, loculis 2-locellatis obtusis. Ovarium triquetrum, conicum, in stylum triquetrum simplicem tridentatum attenuata, 3-loculare, loculi uniovulati, ovulum a medio axis centralis suspensum. Capsulae magnae, chartaceae, maceratione dissepimentorum vulgo 1-loculares, 3- v. abortu nonnunquam 2-alatae, septicide dehiscences, semen solitarium v. duo continentes. Seminum testa membranacea, cotyledones magnae, virides, plicatae. Albumen nullum. Arborea saepe magne deciduae foliis impari-pinnatis foliolisque integris. Flores parvi, albi, in paniculas breves saepius compositas axillares collecti.

50. *ZOLLINGERIA MACROCARPA*, n. sp.

Arbor usque 80 pedalis, novellis fulvo-puberulis; folia vulgo impari-rarius subabrupte pinnata, glabra; foliola alterna, basi magis minusve

inaequalia, petiolulis 2—3 lin. longis suffulta, lanceolata ad oblongo-lanceolata, obtusiuscule acuminata, 5—8 poll. longa, chartacea, integra, laxè reticulata; flores albi, pedicellis 2 lin. longis, paniculas iis *Dodonaceæ* similes breves subnutantes obsolete puberulas axillares v. terminales formantes; sepala lin. circiter longa, obovata, ciliolata, subemarginata; petala 2 lin. longa, ciliata oblonga, obtusa, basi unguiculata squamâ lanatâ obtusâ auctâ; filamenta pubescentia; ovarium basi parè pubescens; capsula 2 poll. circiter longæ, oblongæ, glabræ, 3 v. raro abortu 2-alatæ, alis latis striatis basi angustatis rotundatis apice subtruncatis. —*Prome.*

51. *ACER ISOLOBUM*, nov. sp.

Arbor magna, glabra; folia 5—6 poll. longa et lata, basi rotundata, longe petiolata, 3-loba, lobis patentibus acuminatis, utrinque glabra, 3-nervia et reticulata; flores et fructus ignoti.—*Martaban.*

SABLACEÆ.

52. *SABIA VIRIDISSIMA*, n. sp.

Frutex glaberrimus; folia ovato- ad elliptico-lanceolata, petiolis 6—8 lin. longis, utrinque acuminata, membranacea, glabra, 6—8 poll. longa; flores parvi, albi, pedicellis c. 3 lin. gracilibus dein sursum incrassatis suffulti, paniculas 1 v. 2 laxas breves glabras axillares efformantes; calyx glaber, segmentis ovatis obtusis; petala 2-lin. fere longa; stylus 3-fidus, stigmatibus hippocrepiformibus; fructus....—*Andamans.*

ANACARDIACEÆ.

53. *BUCHANANIA LAXIFLORA*, nov. sp.

Arbor decidua, novellis canescenti-tomentosis; folia ovato-oblonga, basi obtusa, 6—7 poll. longa petiolo crasso semipollicari, coriacea, integra, tomentella, supra glabrescentia; flores minuti, pedicellis brevibus sed gracilibus suffulti, in paniculam terminalem laxam diffusam ramosissimam canescenti v. fulvescenti-pubescentem collecti; bractee minutæ, subulatae; calyx canescenti-puberulus, lobis oblongis acutis vix $\frac{1}{2}$ lin. longis; petala obovato-oblonga, vix lineam longa; filamenta subpuberula; ovarium glabrum.—*Martaban.*

54. *SEMECARPUS SUBRACEMOSA*, nov. sp.

Fruticosa ? novellis fulvo-puberulis; folia verosimiliter decidua, distantia, oblonga v. oblongo-lanceolata, obtusa v. obtusiuscula, basi in petiolum latum $\frac{1}{2}$ —1 poll. longum glabrum subdecurrentia, c. 3—4 poll. longa, integra, tenui-chartacea, supra glaucina, glabra et nitentia, subtus glauca et dum juvenilia minute puberula, dein in costâ crassâ nervisque parallelis anastomosantibus puberula, reticulatione laxâ et conspicuâ interjecta; flores parvi, pedicellis brevissimis dense puberulis suffulti, fasciculato-cymulosi, paniculam gracillimam puberulam v. subpubescentem axillarem et ramorum

apices terminantem ramosam formantes ; calyx puberulus ; petala 5, lineam circiter longa, valvata ; stamina 5, omnia fertilia, filamentis capillaribus ; discus hispido-tomentellus ; ovarium glabrum stylis 3 crassis apicibus capitato-stigmatosis coronatum ; *nux...*—*Pegu.*

55. *HOLIGARNA GRAHAMII* (*Semecarpus Grahamii*, Wight, *Fc. t.* 235).

Arbor 20—30 pedalis, novellis pubescentibus ; folia 1—2½ ped. longa, elongato-obovato-lanceolata, basi cuneato-acuminata, petiolo ½—1 poll. longo crasso utrinque appendicibus barbaeformibus geminis augmento, breve acuminata, integra, coriacea, juvenilia molli-pubescentia, dein supra glabrescentia subtusque glaucescentia et obsolete puberula ; flores parvi, subsessiles, dense ferrugineo-tomentosi, paniculas breviusculas dein elongatas dense ferrugineo-tomentosas axillares efformantes ; bracteolae lineares, intus glabrae, deciduae ; calycis lobi lanceolati, utrinque ferrugineo-pubescentes, pedicelli brevissimi sub fructu usque ad ½ poll. long. elongati ; nucis elliptico-obovatae monospermae pars summa tantum exserta.—*Pegu, Martaban.*

CONNARACEÆ.

56. *ELLIPANTHUS CALOPHYLLUS*, Kurz, *Andam. Rep. Append. B.* 6.

Arbusecula 20—30 pedalis glabra gemmis fulvo-pubescentibus ; folia unifoliolata, petiolis glabris pollicaribus suffulta ; foliola brevissime et crasse petiolata, ovato-oblonga v. oblonga, obtusiuscule acuminata, 5—6 poll. longa, subcoriacea, integra, glaberrima, nervis subtus rubescentibus, utrinque crebre et eleganter reticulata ; flores medioeres, pedicellis strictis brevibus dense puberulis geniculatis ; racemi vix pollicares, dense fulvo-puberuli ; petala lineari-oblonga, dense tomentella, plus quam 3 lin. longa ; folliculi oblique oblongi, in stipitem brevem et crassum attenuati, apiculati, compressiusculi, pollicem circiter longi, velutino-tomentosi, coriacei, intus glabri. *Andamans.*

57. *ELLIPANTHUS TOMENTOSUS*, nov. sp.

Arbusecula ramulis dense fulvo-tomentosis ; folia unifoliolata, petiolis circ. semipollicaribus dense fulvo-pubescentibus ; foliola oblonga ad oblongo-lanceolata et lanceolata, breve obtuseque acuminata, 4—6 poll. longa, integra, coriacea, supra glabra, nitentia et eleganter reticulata, subtus plus minusve fulvo- v. flavescendo-tomentosa, nonnunquam glabrescentia ; flores parviusculi, pedicellis tomentosis brevissimis crassis geniculatis instructi ; racemi breves, tomentosi, axillares, ramosi, saepius paniculaformes ; petala oblonga, obtusa, dense tomentella, 2 lin. circiter longa ; folliculi oblique oblongi, apiculati, compressiusculi, bipollicares, in stipitem longiusculum crassum attenuati.—*Pegu, Martaban, Tenasserim, Siam.*

ROSACEÆ.

58. PYGEUM PERSIMILE, nov. sp.

Arbor, novellis parce adpresse pubescentibus v. puberulis ; folia elliptica ad elliptico lanceolata, petiolo 3 lin. longo gracili ferrugineo-pubescenti suffulta basi obtusa aequalia v. subaequalia, obtuse et sæpius longissime acuminata, integra, submembranacea, supra glabra v. secus nervos impressas minute tomentella, subtus secus costam adpresse pubescentia ; racemi sublanuginoso-tomentosi, bini v. terni supra foliorum delapsorum cicatricibus v. irregulariter e ramis orientes ; pedicelli brevissimi, semilineam longi ; calycis tubus brevis, urceolatus, fulvo-tomentosus ; ovarium dense fulvo-hirsutum ; stylus longe exsertus stigmatibus lato. *P. Lampongo, Miq.*, proximum.—*Tenasserim.*

59. PIRUS KARENSIUM, nov. sp.

Arbuseula 25—30 pedalis, glabra ; folia oblonga ad ovato-oblonga, basi inaequalia, petiolo c. pollicari glaberrimo, acuminata, 4—5 poll. longa, subcoriacea, apicem versus crenato-dentata, glabra ; flores... ; poma cerasi majoris magnitudine, globosa, iis *P. Pashie* subconformia et leucosticta, maturescentia purpureo-atra, pedicellis brevissimis crassis suffulta, in paniculam depauperatam robustam glabram terminalem v. in axillis foliorum superiorum lateralem disposita.—*Martaban.*

60. ERIOBOTRYA ? MACROCARPA, nov. sp.

Arbor 30—40 pedalis, glabra ; folia obovato- ad oblongo-lanceolata, basi in petiolum $\frac{1}{2}$ — $\frac{2}{3}$ poll. longum crassum attenuata, breve et obtuse acuminata, integerrima, 5—6 poll. longa, coriacea, levissima et lucida ; flores... ; pedunculi fructigeri crassissimi et simplices, 1—2 poll. longi, glabri, ex axillis foliorum superiorum orientes v. in ramulis crassis terminales ; fructus magis minusve globosi, cerasi majoris magnitudine, glabri, calycis limbo coronati.—*Pegu.*

COMBRETACEÆ.

61. COMBRETUM TETRAGONOCARPUM, nov. sp.

Frutex scandens glaber ; folia petiolo crasso lin. longo suffulta, oblonga ad elliptico-oblonga, obtusa v. subretusa, chartacea, utrinque conspicue nervosa et reticulata, glabra, 3—5 poll. longa ; spicæ robustæ, fulvo-villosæ, solitariae, foliis breviores v. æquilongæ, axillares v. in paniculas terminales brachiatas depauperatas dispositæ ; flores parvi, albidii, bracteola parva subulata villosa sustenti ; calyx cupulari-infundibuliformis cum tubo ovali brevi ferrugineo-villosulus ; limbus intus dense villosus, extus pubescens et lepidotus, 4-dentatus, dentibus brevibus acutis ; petala minuta ; fructus pollicem longi v. longiores, glabri, pallide brunnei, elliptico-ovati, 4-angulati, angulis crassis coriaceis et sub-alato-prominentibus, nucis diametro multo angustioribus.—*Pegu.*

*MELASTOMACEÆ.*62. *MEMECYLON ELEGANS*, nov. sp.

Frutex glaberrimus ramulis sub 4-angulatis v. lineis 4 decurrentibus magis minusve obsolete elevatis notatis ; folia oblonga ad ovato-oblonga, basi in petiolum 2—3 lin. longum attenuata, obtusa v. subretusa, 3—4 poll. longa, coriacea, nervis lateralibus teneris in statu juvenili tantum visibilibus, glabra ; flores azurei, pedicellis 2—3 lin. longis suffulti, cymam umbelliformem simplicem vel trichotomam pedunculo $\frac{1}{2}$ — $\frac{3}{4}$ poll. longo acute tetragono suffultam efformantes, et linæ v. solitariae ex foliorum axillis v. supra foliorum delapsorum cicatricibus orientes ; ramificationes brevissimæ v. subreductæ ; calyx lævis, $1\frac{1}{2}$ lin. fere in diametro, parte adnatâ hemisphericâ parvâ, limbus latus et explanatus, undulatus et obsolete lobatus, intus radiato-plicatus, plicis subnerviformibus ; petala, baccae &c. desiderantur.—*Andamans.*

63. *MEMECYLON PULCHRUM*, nov. sp.

Frutex glaberrimus ramulis sub-teretibus ; folia larga, sessilia, lato ovato-oblonga, basi rotundata v. subcordata, obtusa v. paulo obtuse producta et subretusa, 5—6 poll. longa, crasse coriacea, nervis venisque haud visibilibus, glabra, supra lucida ; flores azurei, pedicellis $\frac{1}{2}$ — $2\frac{1}{2}$ lin. longis teretibus, depauperato-umbellulati, cymam ampliuseculam pedunculo compresso 4-gono $\frac{1}{2}$ —1 poll. longo suffultam formantes, vulgo ternæ v. 4-næ supra foliorum delapsorum cicatricibus orientes ; bractee distinctæ, ovato-lanceolatae, acutæ ; calyx campanulatus, c. 1 lin. in diametro, lævis, limbus truncatus, intus radiato-plicatus ; petala, baccae etc. desunt.—*Andamans.*

*LYTHRARIÆ.*64. *LAGERSTRÆMIA HYPOLEUCA*, Kurz in And. Rep. 1868, Append. p. VIII.

Arbor vasta 60—70 pedalis glaberrima ; folia lanceolata ad ovato-lanceolata, basi in petiolum brevem decurrentia, acuminata, integra v. undulata, chartacea, 6—8 poll. longa, subtus albido-glaucæ ; flores mediocres, 1— $1\frac{1}{2}$ poll. in diametro, lilacini, pedicellis articulatis albido-puberis instructi, solitarii v. in cymas depauperatas breve pedunculatas minute canescenti-puberarum collecti et paniculam elongatam terminalem formantes ; calyx in alabastro turbينات, pubescentia subvelutina minutâ albescens, sulcato 10-costatus, costis alternantibus in 5 lobos triangulares minute mucronatos excurrentibus ; petala oblonga, undulata, $\frac{1}{2}$ poll. longa ; capsula oblonga, mucronata, lignæ, c. $\frac{3}{4}$ poll. longa.—*Andamans.*

65. *LAGERSTRÆMIA CALYCVLATA*, nov. sp.

Arbor vasta, 60—70 pedalis, novellis tomentosis ; folia oblonga, acuminata, basi inæquali rotundata et in petiolum brevem subdecurentia,

5—7 poll. longa, subcoriacea, supra glabra et minute reticulata, subtus puberula et inter nervos prominentes crasse reticulata; flores ..; panicula ferrugineo—v. fulvo-tomentosa, terminales, e racemis longioribus v. brevioribus compositae; calyx fructigerus cupulari-campanulatus, capsulam arete amplexens, 2—2½ lin. altus, teres, absque costis v. sulcis dense ferrugineo-tomentosus, pedicello brevissimo crasso instructus, 6-lobatus, lobis brevibus triangularibus reflexis planis acutis; capsula oblonga, mucronulata, lucida, pro ½—¾ parte e calyce protrusa, 6-ocularis et -valvis, 3—4 lin. longa.—*Martaban.*

SAMYDACEÆ.

66. HOMALIMUM MINUTIFLORUM, nov. sp.

Arbor glabra; folia oblonga, petiolo 3—4 lin. longo crasso, obtuse apiculata, 3—5 poll. longa, grosse crenata, tenuiter coriacea, glabra; flores minuti, ½ lin. circ. in diametro, pedicellis brevibus filiformibus glabris instructi, fasciculati, racemos solitarios v. binos axillares simplices v. parce ramosos glabros formantes; calyx glaber, segmentis oblongo-linearibus villosis-ciliatis; filamenta gracillima, singula petalis opposita.—*Martaban?*

CUCURBITACEÆ.

67. TRICHOSANTHES MACROSIPHON, nov. sp.

Herba volubilis parce et minute puberula; folia cordato-ovata, petiolo 1½—2 pollicari puberulo, 6—8 poll. longa, basi sinuato-cordata, obsolete remote repando-dentata, saepius in lobos 2 laterales acuminatos producta, acuminatissima, herbacea, glabra, subtus sparse et minute puberula; flores masculi desunt; feminei solitarii, axillares, pedicello puberulo brevi instructi; calyx puberulus, supra ovario in tubum 1½ poll. longum gracilem attenuatus, dentes lineari-subulati, puberuli; petala limbriata.—*Tenasserim.*

BEGONIACEÆ.

68. BEGONIA FLACCIDISSIMA, nov. sp.

Herbula flaccidissima tenera caulescens, 1—5 pollicaris, minute et sparse pubescens; folia alterna, cordato-orbicularia, obtusa, petiolo 2—3 poll. longo gracili sparse pubescente, c. 2 poll. longa et lata, grosse crenato-dentata et sublobata, tenerrime membranacea et flaccida, utrinque pilis minutis teneris adspersa; stipulae oblongae, hyalinae, obtusae, c. 2 lin. longae; flores parvi, albi, pedicellis capillaribus instructi, cymas dichotomo-ramosas sparse et minute pubescentes pedunculo petioli dimidio longitudine axillari gracili suffultas formantes; bractee minutae, lineares; sepalis in maribus 2, rotundato-ovata, c. 2½ lin. longa; petala nulla; perianthii lobi fl. femin. 4, sepalis subconformia; stamina numerosa, subobovata, filamenta usque ad medium fere in columnam brevem gracilem connata; styli 2, a basi liberi, apice in laminam concavam semilunatam stigmatifero-marginatam dilatati;

ovarium sparse et crispato-pilosum, 2-loculare, ovatum, acuminatum; capsulæ...—*Tenasserim.*

UMBELLIFERÆ.

69. *PIMPINELLA PARISHIANA*, nov. sp.

Herba humilis 1—2 pedalis pilis brevibus adpersa; folia ternatisecta, petiolo basi vaginante, foliola cordato-ovata, magis minusve 3-lobata, acuminata, grosse duplicato-serrata, 3—3½ poll. longa, pilis brevibus albis adpersa, foliola lateralia petiolulo subpollicari, medianum petiolulo sub 2-pollicari suffulta, folia superiora sensim minora, integra et supra petiolum vaginantem sessilia; flores albi, pedicellis 2 lin. longis strictis puberulis inserti, involucellato umbellulati, umbellam involucratam compositam formantes; involucri et involuelli foliola linearia, longa, et sæpius apicem versus in dentes 2 laterales producta; fructus...—*Tenasserim.*

70. *HERACLEUM BARMANICUM*, nov. sp.

Herba robusta annua 4—6 pedalis, caulibus hirsutis; folia caulina superiora ternatipinnata, foliola lateralia ovato-lanceolata, sessilia, grosse serrata et sæpe in lobum lateralem producta, foliolo terminali petiolato decurrenti 3-loba serrato-lobato; involucri foliola linearia, brevia; mericarpiæ 3 lin. circiter longa, elliptico-oblonga, lato-marginata.—*Pegu.*

LORANTHACEÆ.

71. *LORANTHUS HYPOGLAUCUS*, nov. sp.

Frutex parasiticus glaberrimus; folia opposita v. subopposita, lanceolata ad elliptico-lanceolata, in petiolum brevem attenuata, magis minusve acuminata, integra, 2½—3 poll. longa, coriacea, nervis lateralibus vix conspicuis, glabra, subtus glauca; flores ½—1½ poll. longi glabri, pulcherrime coccinei, pedicellis 2 lin. longis instructi, geminatim v. ternatim pedunculis brevibus glabris suffulti et fasciculos 2 v. plures axillares formantes; bractea et bracteolæ 2 parvæ, triangulari-ovatae, basi unitæ; calyx glaber, cylindricus, limbo integro truncato; corolla glabra, tubo curvulo et leviter ampliato, limbo profunde 6-fido, lobis linearibus reflexis; stamina 6; antheræ lineares; filamenta stylusque gracillimus, filiformis, glabri; baccae...—*Martaban.*

72. *GINALLOA ANDAMANICA*, nov. sp.

Frutex parasiticus glaberrimus ramis dichotomo-ramosis; folia opposita, obovalia ad ovali-oblonga, basi subobliqua in petiolum brevissimum crassum planum contracta, apice rotundata, integra, subundulata, crasse coriacea, nervis 3—5 in sicco vix conspicuis, 1½—2 poll. longa, glabra; flores minuti, dioici? sessiles, terni v. quaterni (v. plures?) separatim in rhachidis crasse geniculis dilatatis quasi involucrantibus immersi; spicæ 1—4 pollicares, robusti, glabri, e furcationibus ramorum orientes, v. terminales; calycis limbus obsoletus v. nullus?; petala 3, minuta, 3-angularia, conniventia?;

stigma obsolete conicum, parvum ; baccæ immaturæ elongato-ovatae, laeves, truncatae v. petalis diutius persistentibus coronatae.—*Andamans.*

RUBIACEÆ.

73. WENDLANDIA GLOMERULATA, nov. sp.

Arbor v. frutex ? novellis indistincte puberulis ; stipulæ foliaceæ, cordatæ ; folia lineari-lanceolata ad lanceolata, in petiolum brevissimum 1—3 lin. longum puberulum attenuata, longe acuminata, 3—4 poll. longa, integra, membranacea, glabra, subtus secus costam minute adpresse pubescentia ; flores...sessiles, in fasciculos breve pedunculatos congregati et paniculam terminalem parce pubescentem brachiatam formantes ; calyx fructiger adpresse pubescens, dentibus lineari-lanceolatis apparenter tubo longioribus ; capsulæ globosæ, lineam vix longa, pubescentes.—*Tenasserim.*

74. WENDLANDIA SCABRA, nov. sp.

Arbor scabro-pubescent ; stipulæ cordato-reniformes, semiamplexicaules ; folia obovato-elliptica ad elliptica, basi acuta v. acuminata, petiolo $\frac{1}{3}$ — $\frac{2}{3}$ longo brevi pubescente instructa, breve et obtuse acuminata, 3—4 poll. longa, integra, membranacea, utrinque scabro-puberula ; flores minuti, albi, sessiles, in spiculas congregati et paniculam amplam puberulam brachiatam terminalem formantes ; calyx adpresse hispidus, semilineam vix longus, dentibus parvis, 3 angulari-acutis ; corolla glabra, 1—1½ lin. longa, lobis brevibus ; capsulæ globosæ, $\frac{1}{2}$ lin. in diametro, minute adpresse hispide.—*Ava.*

75. ARGOSTEMMA SONERILOIDES, nov. sp.

Herba annua succulenta cauli simplici apice folioso plus minusve villosulo ; folia subverticillata, ovata ad subcordata, petiolo brevissimo crasso villosulo, 1—2½ poll. longa, acuta v. obtusiuscula, utrinque pilis brevibus albis adpersa et subtus secus nervos pubescentia ; flores parvi, pallide rosei v. albi, pedicello lineari villosulo instructi, umbellam parvam villosam v. cymam umbellatam pedunculo 1—½ pollicari villosulo terminali sustentam formantes v. rarissime solitarii v. subsolitarii ; bractee vulgo majusculæ, 2—4-nae involucria specialia efformantes ; calyx villosulo-pubescent, 3 lobus, lobis lato-triangularibus ; corolla subcampanulata, 3-loba, lobis lineam tantum longis ; antheræ oblongæ, obtusæ.—*Pegu ; Andamans.*

76. SPIRADICLIS BIFIDA, nov. sp.

Herba annua erecta parce ramosa 1—1½ pedalis, caulibus puberulis ; folia obovato-lanceolata, basi cuneata et in petiolum $\frac{1}{4}$ — $\frac{1}{2}$ pollicarem magis minusve pubescentem decurrentia, 2—5 poll. longa, breve acuminata, integra membranacea, glabra v. subtus secus nervos puberula ; flores minuti, albi, sessiles, in spicas longiores v. breviores bifidas collecti et in paniculam plus minusve puberulam elongatam terminalem dispositi ; capsulæ globoso-2-lobæ, lin. circiter in diametro.—*Marlaban.*

77. *OPHIORHIZA GRACILIS*, nov. sp.

Herba annua, erecta, simplex $\frac{1}{2}$ —1 pedalis, glaberrima; folia oblongo-lanceolata ad lanceolata, basi acuminata, petiolo gracili $\frac{1}{2}$ —1 poll. longo, longe acuminata, 3—5 poll. longa, integra, membranacea, glaberrima, subtus pallida; flores parvi, albi, pedicellis brevissimis instructi et sessiles, spicam secundam bifidam formantes et in cynam longe pedunculatam terminalem glaberrimam gracilem dispositi; bracteae et bracteolae lineari-subulatae, parvae; corolla glabra, tubo circa 3- lineari, lobis obtusis.—*Tenasserim.*

78. *HEDQOTIS ANDAMANICA*, nov. sp.

Herba annua subsimplex v. ramosa erecta, $\frac{1}{2}$ —1 pedalis, ramis minute puberulis; stipulae latae, apice longifimbriatae, puberulae; folia variabilia, ovata ad oblonga et obovata, basi acuta v. in petiolum 1—3 lin. longum puberulum attenuata, membranacea, 1—2 poll. longa, obtusa v. subobtusa, saepius cum mucrone, integra v. undulata, subtus secus nervos minute puberula; flores parvi, albi, subsessiles, glomerati; capitula pedunculo longo, solitaria, v. vulgo in cynam laxam trichotomam puberulam disposita, axillaria et terminalia; calyx subglaber, lobis linearibus lineam fere longis et calycis tubo longioribus; capsula compresso-didyma, semiorbilucae, circ. 2 lin. in diametro, pilis adpressis minutis adpersae, carinis 4 nonnunquam subuliformibus notatae et calycis lobis lanceolatis longis coronatae.—*Andamans.*

79. *WEBERA GLOMERIFLORA*, nov. sp.

Arbuseula 20—30 pedalis, glabra v. gemmis pubescentibus; stipulae caducae; folia obovato-lanceolata ad elliptico-lanceolata, basi acuminata, petiolo 2—4 lin. longo glabro, 3—4 poll. longa, acuta v. apiculata, integra, crasse membranacea, glabra, crassinervia; flores subsessiles, in cynam terminalem subsessilem pubescentem conglomerati; calyx pubescens; corolla...; baccae atrae, globosae v. ovoidae, pisi minoris magnitudine, laeves, basi calycis limbi coronatae, pedicello lineam circiter longo suffultae.—*Pegu.*

80. *GARDENIA ERYTHROCLADA*, nov. sp.

Arbuseula rigida 15—25 pedalis, trunco ramisque lateritiis et spinis oppositis (ramulis reductis) armatis, novellis pubescentibus; stipulae caduissimae; folia obovato- ad cuneato-obovata, basi saepius inaequali in petiolum $\frac{1}{2}$ —1 poll. longum pubescentem decurrentia, 4—6 poll. longa, obtusa, integra v. subintegra, membranacea, utrinque (praesertim subtus) pubescentia; flores viridiusculi, dimorphi, fertiles in individuis iisdem v. separatis solitarii, sessiles v. subsessiles, apicibus ramorum abbreviatorum crassorum terminantes, fl. hermaphrodito-steriles pedicellis longis gracilibus pubescentibus instructi, fasciculos sessiles v. breviter pedunculatos terminales v. subaxillares formantes; calyx pubescens, tubo in fl. fertilibus magis evoluti, lobis foliaceis, obovatis, 4—6 lin. longis; corolla pubescens, tubo brevi amplo; baccae florum fertiliam sessiles, ovi anatis magnitudine, ovoidae, scabrescentes, brunneae ob-

soleto-costata; cæ fl. sterilium pedunculo $1\frac{1}{2}$ —2 poll. longo stricto brunneo-pubescente suffulta, cerasi minoris magnitudine, magis minusve globosæ, calycis limbo magno foliaceo coronatæ.—*Ava, Pegu, &c.*

81. *GARDENIA DASYCARPA*, nov. sp.

Arbuseula rigida spinis oppositis longis strictis armata, 12—15 pedalis, novellis villosa-pubescentibus; stipulæ deciduæ; folia obovato-oblonga, basi acuta v. acuminata, petiolo 1—2 lin. longo instructa, 1—2 poll. longa, integra, obtusa v. acuta, coriacea, supra retrorse puberula, subtus adpresse villosa-pubescentia; flores...sessiles, solitarii e ramulorum crassorum verruciformium apicibus; bacca globosæ, corticosæ, pomini majoris magnitudine, calycis limbo tubulari coronatæ.—*Prome, Tenasserim.*

82. *GARDENIA HYGROPHILA*, nov. sp.

Fruticulus 1—3 pedalis, ramis sæpius diffusis, glaberrimus; stipulæ connatæ, glabræ v. sparse hirsutæ; folia obovata ad obovato- et elliptico-oblonga, basi acuta, petiolo 2—3 lin. longo gracili, obtusa v. acuta, 2—2½ poll. longa, integra, membranacea, supra lucida, glabra; flores mediocres, albi, in sicco nigrescentia, subsessiles, solitarii ex apicibus ramulorum v. in eorum furcationibus; calyx glaber v. parce adpresse pubescens, 4 lin. fere longus, limbo campanulato, 5-fido, lobis linear-lanceolatis acuminatis sparse ciliatis; corolla lineam circiter longa, subirregulari-campanulato-infundibuliformis, lobis inæqualibus c. $\frac{1}{2}$ poll. longis; bacca.....—*Pegu, Siam.*

83. *GARDENIA PULCHERRIMA*, nov. sp.

Arbor 30—35 pedalis, glabra; stipulæ lato-triangulares, libere v. sublibere; folia lato- ad oblongo-lanceolata v. elliptico-oblonga, basi acuta, petiolo crasso 3—4 lin. longo, 3—5 poll. longa, breve acuminata, integra, coriacea, glaberrima, subtus in nervorum axillis glandulosa; flores magni et speciosi, pedicello 2—3 lin. longo bracteato tomentoso instructi, terni v. plures cynam breve pedunculatam fulvescente tomentosam in ramulorum furcationibus v. pseudo-axillarem formantes; calyx c. 3—3½ lin. longus, tomentosus, limbo amplo 5-dentato, dentibus ovatis acutis; corolla glabra, alba, intus in fundo roseo-punctata, 1½ poll. longa, v. paullo longior, supra tubo brevissimo ventricosus-efflata; bacca globosæ, aurantii minoris magnitudine, corticosæ et scabræ, brunneæ, calycis limbo coronatæ.—*Andamans.*

84. *ACRANTHERA UNIFLORA*, nov. sp.

Herba perennis 4—6 poll. alta v. altior, parce pubescens; folia ovalia ad ovali-lanceolata, basin obtusam v. rotunditatem versus attenuata, petiolo gracili pubescente suffulta v. superiora subsessilia, 1—1½ poll. longa, membranacea, obtusiuscula v. acuta, integra, supra parce adpresse hirsuta, subtus secus nervos sparse pubescentia; flores majusculi, albi, solitarii, sessiles v. subsessiles, terminales; calyx fulvo-adpresse-hirsutus, tubo 2 lin. fere longo, lobis linearibus, 2—2½ lin. longis; corolla hypocraterimorpha, tubo pollicem fere longo, adpresse pubescente, lobis dimidio longis elliptico-ovatis

acutis ; stylus profunde bilobus ; baccæ ellipticæ, pisi magnitudine, hirsutissimæ, calycis lobis linearibus terminatæ.—*Tenasserim.*

85. *UROPHYLLUM BILOCULARE*, nov. sp.

Arbor 25—30 pedalis, glabra ; stipulæ e basi lata subulato-acuminatæ, parce adpresse pubescentes ; folia oblongo-lanceolata ad lato-lanceolata, basi acuminata, petiolo 1—2 lin. longo suffulta, obtuse acuminata, 4—5 poll. longa, integra, chartacea, glabra ; flores minuti, sessiles, in fasciculos parvos axillares collecti ; calyx (in alabastro) truncatus, minute puberulus ; baccæ globosæ, aurantiacæ, pisi minoris magnitudine, obsolete bilobæ, calycis limbo brevi coronatæ, 2-loculares ; semina in loculo singulo 3—4, nigra, majuscula, placentæ centrali medio affixa.—*Martaban.*

86. *MORINDA LEIANTHA*, nov. sp.

Arbuseula ? scabrido-pubescent ; stipulæ ovato-lanceolatæ, acuminatæ, scabræ ; folia oblongo-lanceolata ad lanceolata, basi acuta v. acuminata, petiolo scabro 1—1½ poll. longo suffulta, 5—8 poll. longa, acuminata, integra v. subintegra, chartacea, utrinque præsertim subtus scabrido et parce pubescentia ; flores albi, majusculi, sessiles, in capitula parva oblonga pedunculata solitaria v. pluria ex axillis foliorum superiorum orientia v. terminalia conglomerati ; calyx truncatus ; corolla hypocraterimorpha, glabra, faucē glabra, tubo gracili ¾ poll. circiter longo, lobis ovato-lanceolatis ; baccæ.....—*Tenasserim.*

87. *MORINDA WALLICHII*, nov. sp.

Arbuseula ?, glaberrima ; stipulæ... ; folia oblongo-lanceolata ad oblongo-linearia, utrinque acuminata, petiolo ½—1½ poll. longo, 3—5 poll. longa, integra, crasse membranacea, glabra, subtus pallida ; flores parviusculi, albi, terni v. quaterni in capitula parva cymam terminalem glabram striete pedunculatam formantia collecti ; calyx truncatus ; corolla glabra, tubo (in alabastro) ¼ poll. longo, lobis æquilongis, oblongo-linearibus obtusiusculis.—*Tenasserim.*

88. *PSILOBIUM CAPILLARE*, nov. sp.

Arbuseula 20—25 pedalis, glaberrima, lucida ; stipulæ acuminatæ, rigide ; folia variabilia, iis *Pavetta parvifloræ* similia, lanceolata ad oblongo-lanceolata et elliptico-oblonga, basi acuta, petiolo brevissimo 1—3 lin. longo suffulta v. subsessilia, magis minusve acuminata v. subobtusata, 3—5 poll. longa, integra v. undulata, rigide sed tenui coriacea, utrinque levia et lucida ; flores parvi, albidii, sessiles v. subsessiles, pauci v. numerosi in capitulum parvum basi bracteis paucis lineari-subulatis rigidis involueratum pedunculatum congregati ; pedunculi axillares v. supra-axillares, solitarii, stricti, graciles v. capillares, 1—2 poll. longi, sursum sensim incrassati ; calyx lineam circiter in diametro, cupularis, 4-dentatus, dentibus triangularibus ciliolatis ; corolla brevis, hypocraterimorpha, faucē dense villosa, tubo 1½ lin. circiter longo ; baccæ.....—*Pegu ; Martaban ; Tenasserim.*

89. *VANGUERIA PUBESCENS*, nov. sp.

Arbuseula decidua, 20—25 pedalis, pubescens, spinis oppositis rectis armata; stipulae subulatae, pubescentes; folia ovata ad elliptico-lanceolata, basi acuta v. cuneata, petiolo 2—3 lin. longo pubescente, breviter acuminata v. acuta, 2—3 poll. longa, integra, membranacea, supra breve et scabridosubtus molli-pubescentia; flores parvi, viridiusculi, pedicellis 2—3 lin. longis pubescentibus, in cymulas v. fasciculos e ramulis reductis verruciformibus v. ex foliorum axillis ortos dispositi; calyx pubescens, lobis linearibus; corolla pubescens; stigma capitatum; baccæ cerasi minoris magnitudine, $\frac{1}{2}$ — $\frac{1}{3}$ poll. crassae, laeves, lutescentes, pyrenas 5—4 osceas monospermas continentes.—*Barma.*

90. *CANTHIUM GRACILIPES*, nov. sp.

Frutex inermis, ramulis parce pubescentibus; stipulae ovatae, subulato-acuminatae, adpresse fulvo-pubescentes; folia ovato-oblonga ad oblongo-lanceolata, basi acuta v. obtusa, petiolo tenui 1—2 lin. longe pubescente suffulta, 2—4 poll. longa, integra, acuminata, membranacea, nervis fulvo et tenui pubescentibus exceptis glabra; flores parvi, pedicellis $\frac{1}{2}$ — $\frac{3}{4}$ poll. longis capillaribus sparse adpresse pubescentibus instructi, solitarii v. gemini, e ramulis abbreviatis lateralibus orientes; calyx glaber, hemisphaericus, $\frac{1}{2}$ lin. longus, dentibus 3-angularibus; corolla...; drupe didymo-reniformes, apice sinuatae, compressiusculae, laeves, pyrenas 2, (v. abortu 1) obsolete rugosotuberculatas dorso rotundatas includentes.—*Andamans.*

91. *GYNOCHTHODES MACROPHYLLA*, nov. sp.

Frutex scandens, glaber, partibus omnibus in sicco nigrescentibus; stipulae geminatae et breves, truncate; folia elliptica ad elliptico-oblonga, basi acuta, petiolo semipollicari sustenta, magis minusve obtusiuscule apiculata, 3—5 poll. longa, integra, pergamentacea, glabra, subtus in axillis nervorum fimbriato-glandulosa; flores parvi, pedicello crasso 2—3 lin. longo sustenti, 4—5-ni in pedunculo verruciformi breve bracteato fasciculati; calyx lineam circiter longus, glaber, tubo subgloboso, limbo truncatus, cyathiformis, tubi longitudinis; corolla &c. ignota.—*Andamans.*

92. *PSYCHOTRIA HELFERIANA*, nov. sp.

Frutex fulvo- v. brunneo-hirsutus; stipulae lanceolatae, acuminatae, fere ad basin bifidae, dense adpresse ferrugineo-hirsutae; folia lanceolata, utrinque acuminata, petiolo adpresse brunneo-hirsuto $\frac{1}{2}$ —1 pollicari sustenta, 3—4 $\frac{1}{2}$ poll. longa, integra, membranacea, utrinque breve-hirsuta; flores minuti, virescenti albidi, sessiles, in capitulas densas breve pedunculatas congregati et cymam compactiusculam v. laxam trichotomam ferrugineo-hirsutam terminalem (et axillarem?) formantes; calyx brunneo-hirsutus, lineam circiter longus, dentibus lanceolatis; corolla glabra, fauce barbata, tubus lineam fere longus, lobi tubi longitudinis; baccæ ovales, calycis limbo hirsuto coronatae

lisi magnitudine, sparse hirsutae, aurantiacae; pyrenae carinato-triangulares; albumen æquum.—*Tenasserim* or *Andamans.* (?)

93. *PSYCHOTRIA MONTICOLA*, nov. sp.

Frutex humilis 1—3 pedalis glaber; stipulae bitidae, lanceolatae v. a basi lata acuminatae, deciduae; folia lanceolata ad oblongo-lanceolata, utrinque acuminata, petiolo $\frac{1}{2}$ —1 pollicari, 4—6 poll. longa, integra, crasse membranacea, glabra, paululo glaucescentia; flores parvi, albi, sessiles, in capitula 3 brevè pedunculata v. subsessilia bractea dense congregati et cynam depauperatam pedunculo crasso saepius villosulo $\frac{1}{2}$ —1 $\frac{1}{2}$ pollicari suffultam terminalem v. e ramulorum furcationibus orientem formantes; calyx lineam circiter longus, glaber v. obsolete pubescenti-ciliatus, 5-fidus, lobis lanceolatis subulato-acuminatis; corolla glabra, fauce villosa, tubus lineam circiter longus, lobi tubi longitudinis; baccæ oblongae, pisi magnitudine, rubrae, lucidae, calycis limbo coronatae; pyrenae longitudinaliter sulcatae et costatae (costis 3—4); albumen spurie ruminatum.—*Martaban, Tenasserim.*

94. *PSYCHOTRIA VIRIDISSIMA*, nov. sp.

Fruticulus 1 $\frac{1}{2}$ —2 pedalis glaberrimus; stipulae verosimiliter lato- et brevè triangulares, valde deciduae; folia ovato-oblonga ad elliptico-lanceolata, basi cuneatâ in petiolum subracilem $\frac{1}{2}$ —1 $\frac{1}{2}$ poll. longum decurrentia, magis minusve acuminata, 4—7 poll. longa, integra, tenere membranacea et flaccida, glabra, viridia; flores parvi, albi, pedicello crasso c. lin. longo suffulti cynam corymbiformem trichotomam brevè ($\frac{1}{3}$ —1 poll.) pedunculatam glaberrimam terminalem formantes; calyx glaber, brevissimus, obsolete dentatus; corolla fauce barbata, tubo amplo infundibuliformi lin. longo v. paullo longiore, lobis paullo brevioribus; baccæ...—*Martaban, Tenasserim.*

95. *PSYCHOTRIA CALOCARPA*, nov. sp.

Suffrutex 1—1 $\frac{1}{2}$ pedalis subherbaceus, rhizomate repente, ramulis junioribus naris minusve crispulo-puberulis; stipulae bitidae, e basi latiori subulato-acuminatae et saepius apicibus brunnescenti-pubescentes; folia oblonga et ovata ad ovato-oblonga, basi acuta, petiolo crasso crispo-tomentosulo suffulta, acuta ad acuminata, 3—7 poll. longa, integra, pergammacea, glabra v. vulgo subtus secus nervos indistincte puberula; flores parvi, albi, pedicellis brevissimis crassis, cynam brevè ($\frac{1}{2}$ poll.) pedunculatam contractiuseculan erectam v. nonnunquam mutantem tomentellam terminalem v. spurie axillarem efformantes; calyx lineam fere longus, 4-fidus, lobis lanceolatis obtusis viridibus; corolla intus albo-villosa, tubus calycis segmentorum longitudine, limbi lobi breves, oblongi, obtusiuseculi; baccæ calycis lobis conspicuis coronatae, ellipticae, pisi magnitudine, lucidae, coccineae; semina membrana alba tenui tantum induta, plano-convexa, laxa; albumen æquum.—*Pegu, Martaban, Tenasserim.*

96. *IXORA (PAVETTA) COMPACTIFLORA*, nov. sp.

Frutex? glaber; stipulae brevè ovatae, acutae; folia elliptica ad lato-

lanceolata, basi cuneata in petiolum $\frac{1}{4}$ — $\frac{1}{2}$ pollicarem crassum attenuata, longiuscule acuminata, 3—5 poll. longa, integra, subpergamacea, glaberrima, in sicco nigrescentia; flores parvi, sessiles v. subsessiles, capitulum densum circiter pollicem crassum involucatam terminalem v. spurie lateralem formantes; involucri bractee parvae et inconspicuae, lato-ovatae, imbricatae; calyx lineam circiter longus, glaber, dentibus oblongis obtusis semilinealibus; corolla glabra, tubo 3 lin. tantum longo, ampliuscula, lobi oblongi, obtusi, tubi longitudinis; baccæ.—*Tenasserim.*

97. *IXORA (PENTADIUM) HELPERI*, nov. sp.

Frutex ? glaber; stipulae lato-ovatae, acuminatae, glabrae; folia oblongo-lanceolata, utrinque acuminata, petiolo 3—4 lin. longo, integra, 5—8 poll. longa, tenui membranacea, in sicco nigrescentia; flores majusculi, pedicello crasso puberulo usque ad lineam longo sustenti, cymulosi et paniculam thyrsoidem brachiata longè pedunculatam sparse puberulam efformantes; bracteolae lineari-subulatae unacum bracteis glabrae; calyx $1\frac{1}{2}$ lin. fere longus, minute puberulus, dentibus 5 lanceolatis acutis calycis tubi longitudine; corolla (in alabastro) extus minute fulvo-pubescent, lobi duplo breviores; baccæ....—*Tenasserim.*

98. *IXORA SESSILIFLORA*, nov. sp.

Frutex magnus ramosus glaberrimus; stipulae e basi latâ rotundatâ abrupte acuminatae; folia oblonga ad oblongo-lanceolata, basi rotundata, petiolo crasso 2—3 lin. longo suffulta, breve acuminata, 3—4 poll. longa, integra, tenui coriacea, glabra; flores (inprimis tubus) pallide rosei, parviusculi, sessiles, corymbum parviusculum trichotomum glabrum efficientes; pedunculus semipollicaris; calyx $\frac{1}{2}$ lin. longus, glaber, dentibus brevissimis; corolla glabra, tubo gracili fere $\frac{2}{3}$ pollicari, lobi ovato-oblongi, acutiusculi; stigma breviter exsertum; baccæ....—*Martaban.*

99. *IXORA MEMECYLIFOLIA*, nov. sp.

Frutex glaber; stipulae e basi latâ abrupte et longè subulatae; folia ovata v. ovato-oblonga, subsessilia, basi rotundata v. subcordata, $2\frac{1}{2}$ —4 poll. longa, acuminata, integra, tenui-coriacea, glabra, in sicco nigrescentia v. fuscescentia; flores parvi, albi ? v. pallide rosei ?, sessiles, corymbum longius v. brevius pedunculatum trichotomum glabrum terminalem vulgo ad basin diminute bifoliatum formantes; bractee parvae, lineares; calyx glaber, lineam circiter longus, dentibus fere calycis tubi longitudine lanceolatis; corolla glabra, tubo circ. 4 lin. longo, lobi dimidio fere breviores; stylus longe-exsertus, apice bilobus; baccæ....—*Tenasserim.*

100. *IXORA BRANDISIANA*, nov. sp.

Frutex glaber; stipulae e basi latâ subulato-acuminatae; folia oblongo-ovata ad oblonga, petiolo brevissimo crasso suffulta v. subsessilia, basi rotundata, 4—6 poll. longa, acuminata, integra, tenui-coriacea, glabra, in sicco nigrescentia; flores longissimi, albi ?, brevissime pedicellati, cymam par-

vam trichotomum minute puberulam brevissime pedunculatam terminalem formantes ; bractee parvae, lanceolatae, acuminatae, superiores angustiores et minores ; calyx lineam longus, glaber, lobis lanceolatis acutis, calycis tubi longitudine ; corolla glabra, fauce villosa, tubo gracillimo $1\frac{1}{2}$ —2 pollicari, lobi lineari-oblongi, acuti, 3—3½ lin. longi ; stylus exsertus lobis stigmaticis brevissimis ; baccæ....—*Tenasserim.*

101. *IXORA BRUNNESCENS*, nov. sp.

Arbuseula 20—25 pedalis glabra ; stipulae e basi lata abrupte sublato-acuminatae ; folia magis minusve obovata, basi rotundata v. obtusa, crasse et brevissime (-1 lin.) petiolata v. subsessilia, 4—6 poll. longa, obtusa v. obtusiuscule apiculata, integra v. undulata, coriacea, glabra, nervis lateralibus approximatis et subparallelis ; flores...graciliter pedicellati, cymulosi, corymbum brachiatum trichotomum breve ($1\frac{1}{2}$ —1½ poll.) pedunculatum glabrum terminalem formantes ; calyx parvus, glaber, dentibus minutis triangulari-acutis ; corolla... ; baccæ globosae, calycis limbo coronatae, pisi minoris magnitudine, leves.—*Andamans.*

102. *IXORA ROSELLA*, nov. sp.

Frutex glaber ; stipulae ovatae, acuminatae ; folia oblongo-lanceolata ad elliptico-oblonga, basi acuminata, petiolo crasso $\frac{1}{2}$ —1 poll. longo suffulta, breve et subabrupte acuminata, 6—9 poll. longa, integra, coriacea, glabra, subtus pallida ; nervis lateralibus tenuibus, satis approximatis et leviter curvato-parallelis ; flores minores, pallide rosei, pedicellis 1—3 lin. longis suffulti, cymulosi, in corymbum subsessilem brachiato-trichotomum minute puberum terminalem dispositi ; calyx $\frac{1}{2}$ lin. longus, minute puberulus dentibus minutis lato-triangularibus acutis et obtusis ; corolla glabra, tubo pollicem circiter longa, lobi oblongi, obtusi, quadruplo breviores ; stylus breviter exsertus lobis stigmaticis crassis vix separatis ; baccæ globosae, pisi minimi magnitudinae, calycis limbo coronatae, laeves.—*Andamans.*

COMPOSITÆ.

103. *LEUCOMERIS DECORA*, nov. sp.

Arbuseula 12—15-pedalis, decidua, novellis albido-villosis ; folia elliptico-ad oblongo-lanceolata, basi inequali acuta, petiolo $\frac{1}{2}$ —1 poll. longo glabro suffulta, 5—7 poll. longa, membranacea, acuminata, glabra v. subglabra ; capitula brevi squamato-pedunculata in ramorum apicibus dense aggregata ; involucrium elongato-cyathiforme, in pedunculum imbricato-squamatum, 3—4 lin. longum attenuatum ; squamæ lanceolatae, deorsum sensim minores, rigidae, tenui-arachnoideae, virides ; flosculi fragrantissimi, albi, pollicem fere longi ; pappus pallide fulvescens, semipollicaris ; achenia semipollicaria, sulcata, dense adpresse villosa-sericea.—*Prome.*

104. *AINSLIÆA BRANDISIANA*, nov. sp.

Herba perennis, erecta, 1—3-pedalis parce villosa; folia rosulata, cordato-oblonga ad cordato-elliptica, petiolo $\frac{1}{2}$ —2 poll. longo, stipposo-villoso crasso suffulta, 2—4 poll. longa, acuta v. obtusiuscula, marginibus integris dense villosis, crasse membranacea, præsertim subtus plus minusve hirsuta, supra sæpius glabrescentia; capitula in scapo radicali paniculata, pedunculis $\frac{1}{2}$ —1-pollicaribus glanduloso-puberis suffulta; bractee minutæ, subulatæ, subrigidæ; involucri squamæ lineari-lanceolatae, acutæ, rigidae, 4-lin. longæ, inferiores duplo v. triplo breviores, læves, virides, albido-marginatæ; flosculi albi, $\frac{1}{2}$ poll. fere longi; achenia 2—3 lin. longa, adpresse pubescentia; pappus flavidus, c. 4 lin. longus.—*Martaban.*

105. *TRICHOLEPIS KARENSIUM*, nov. sp.

Herba annua, robusta, ramosa, 2—3 pedalis, parce pubescens; folia caulina linearia ad lineari-lanceolata, $2\frac{1}{2}$ —3 poll. longa, basi in petiolum brevissimum attenuata, acuminata v. acuta, remote setaceo-denticulata, membranacea, parce arachnoideo-pubescentia, supra glabrescentia; capitula magna, 2 poll. fere in diametro, terminalia, solitaria, sessilia; involucri squamæ numerosissimæ, densissime imbricatæ, subulatæ, 1—1 $\frac{1}{2}$ poll. longæ, albido-pilosæ; flosculi purpurei? achenia 3—4 lin. longa, lævia; pappus inæqualis achenio duplo circiter longior, flavescens, pilosus.—*Martaban.*

MONOGRAPH OF INDIAN CYPRINIDÆ. (Part VI).—by Surgeon Major
FRANCIS DAY.

Since the commencement of this Memoir on the carps of India, in the Journal of the Asiatic Society of Bengal, (vol. XL, Pt. II, 1871) several new or little known species have been personally collected, or received through the kindness of friends. All of these require to be fully described, (except *Labeo boygut*, Sykes, and *Cirrhitina dero*, Ham. Buch., see ante J. A. S. B. 1872, pp. 259 and 960); likewise a few corrections have to be noted.

DISCOGNATHUS LAMTA.

In Journ. A. S. B. for 1871, Pt. II, p. 110, for D. $\frac{3}{8}$, V. 10, read D. $\frac{3-2}{8-2}$, V. 9, Vert. 18/14.

A very interesting variety of this species has been kindly collected for me by Dr. Waagen from the Nilwan ravine near the Shapur salt ranges. The depression across the snout is very deep, and the dorsal fin is concave along its upper margin and higher than the body.

Genus. OREINUS.

Copæodon micracanthus, Günther, Catal. vii, p. 81.

Four specimens of this fish "stuffed from 18 to 23 inches long. Puna-ka. From the collection of the East India Company," exist in the British Museum, and are now correctly labelled *Orcinus*, to which genus they belong.

LABEO RICHORHYNCHUS.

l. c. p. 123, erase " ? *Cyprinus musiha*, H. B. pp. 333, 392."

LABEO NUKTA.

Cyprinus nukta, Sykes, Trans. Z. S. ii, p. 325.

„ *auratus*, Sykes, l. c.

Carassius auratus, Günther, Catal. vii, p. 32 (not syn.).

B. III, D. 2/9, P. 15, V. 9, A. 2/5, C. 19, L. 1. 38, L. tr. 8/9.

Length of head nearly 1.5, of caudal 2.9, height of body 2.7 of the total length. *Eyes*, diameter 1.6 of length of head, $2\frac{1}{2}$ diameters from the end of the snout, and slightly nearer the posterior margin of the opercle than to the end of the snout. *Head* compressed, snout projecting over the mouth and having a deep groove passing from one orbit to the opposite one, thus occasioning the appearance as if there were a blunt compressed knob, between and before the orbits. Mouth transverse. The lips with a distinct inner fold at the angle of the mouth and extending across the outer third of the lower jaw, from which the tip is reflected and rough, but neither are fringed. Some large pores on the snout, forehead and in the rostral groove. *Barbels*, a fine maxillary pair. *Fins*, dorsal without any osseous ray, arising midway between the snout and the posterior extremity of the base of the anal fin, its anterior three rays are much elevated and higher than the body, the last besides being divided to its root, being also somewhat prolonged, so the upper margin of the fin is concave. Ventrals arise under the middle of the dorsal and scarcely reach the anal. Pectoral as long as the head. Caudal deeply forked. *Lateral line* complete to the centre of the base of the caudal, but very badly marked, $1\frac{1}{2}$ rows of scales between it and the base of the ventral fin. *Colours* silvery with some red marks on some of the scales.

Hab.—Dakhin (Deccan) ; through the assistance of Colonel Eveyard, I obtained two specimens from Puna, 10 and 12 inches respectively in length.

Genus. CIRRIINA.

CIRRIINA SINDENSIS.

B. III, D. 3/10, P. 15, V. 8, A. 2/5, C. 19, L. 1. 43, L. tr. 8.8.

Length of head, of caudal fin, and height of body each $\frac{1}{5}$ of the total length. *Eyes*, situated in the middle of the length of the head, 2 diameters

from the end of the snout. Interorbital space nearly flat. Snout rounded, covered with glands and having a deep groove extending across it from eye to eye. Mouth transverse, inferior. Mandibles sharp not enveloped in lip, and having a thin horny covering. Lips entire. *Barbels*, a pair of very short maxillary. *Fins*, dorsal commences midway between the end of the snout, and the posterior extremity of the base of the anal, its third undivided ray weak, fin rather higher than the body. Pectoral as long as the head without the snout, not reaching the ventrals, which last arise under the middle of the dorsal. *Lateral line* nearly straight, $6\frac{1}{2}$ rows of scales between it and the base of the ventral fin. *Colours* silvery with a reddish tinge, the bases of the scales the darkest, fins red.

Hab.—Sind Hills, attaining 8 inches in length.

Although this fish is evidently a *Cirrhitina*, as seen by the position of its ventral fins, still the horny covering to its lower jaw is remarkable.

CIRRHINA BATA, H. B.

Day, J. A. S. of Beng, 1871, p. 140.

Cyprinus bata, H. Buch., is said to be "found in the rivers and ponds of Bengal" (H. B.), its native name is given as *bata*. From the same localities and called by the same name '*bata*' I obtained numerous specimens of a fish agreeing in *nearly* every respect with H. B.'s description and a figure which still exists amongst his MS. drawings; the *only exception being* that the drawing gives 12 dorsal rays instead of 11, whilst the text states "the last of them being divided to the root," which division to the root is not shown in the last ray in the original drawing. To me (but I do not assert that I cannot be mistaken) it appears that the artist has separated the bases of the last two rays which should be shown as arising from one common root. Were this so in the drawing, the figure and the description would agree with my specimens (see Proc. Zool. Soc. 1871, p. 636).

Whilst seeing no reason for changing my views, I think it but fair to give Dr. Günther's opinion that "Hamilton Buchanan's fish has more than nine branched rays, (Zool. Record, 1870, p. 135). "The words of Hamilton Buchanan that this fish has "twelve rays in the fin of the back"....."the first" and "second" being "undivided, the others are branched, the last of them being divided to the root" have always conveyed to my mind the idea that this fish was described as clearly as possible as a fish with 10 branched dorsal rays." * * * "Finally to set the matter beyond further dispute also with regard to the *C. bata*, I give (p. 765) an exact tracing of Hamilton Buchanan's MS. drawing of this fish, in which the ten separate branched dorsal rays are as clearly shown as could well be done." (Proc. Zool. Soc. 1871, p. 764).

It may perhaps be regretted that an addition has been made to the original figure, by numbers 1—10 having been added above the branched rays. Number 10, it will be perceived in the drawing, is not divided to the root, consequently if 9 and 10 sprang from one common root, the fish would agree with the species I have described in its native name, its description, its figure and the locality it inhabits; whereas such a fish with 10 branched rays, the last divided to its root, has not been collected, so far as I am aware. Still as the species is very largely domesticated, such a variety doubtless might easily occur.

Finally I may observe that, although Dr. Günther appears so decidedly of opinion that my fish with 11 dorsal rays cannot be H. B.'s *C. bata*, the following occurs in the Catalogue of Fishes of the British Museum, vii, p. 35. "5. *Cyprinus bata*, *Ham. Buch.*, p. 283; ? — *Cyprinus aera*, *Ham. Buch.*, p. 284; = *Cyprinus cura*, *Ham. Buch.*, p. 284." In Hamilton Buchanan's work he gives the number of rays of the dorsal fins of these species thus. *C. bata*, D. 12, *C. aera*, D. 11, *C. cura*, D. 12, and the species *C. aera*, with D. 11, and *C. cura*, with D. 12, are set down as identical even by Dr. Günther, whilst Hamilton Buchanan observes that the *C. aera*, "has the utmost resemblance to the *Bata*," and the *C. cura* is another fish nearly allied to the *Bata*. McClelland, Ind. Cyp. J. A. S. of B. 1839, p. 356, observes "*Cyprinus aera*, Buch., is also said to have the upper lobe of the caudal longer than the lower, but it has only eleven rays in the fin of the back; now whether a species can be said to have eleven or twelve rays in the dorsal depends entirely on the degree to which the last ray is separated or divided, which in this group it always is, more or less; there can, therefore, be little doubt the *Cyprinus bata* and *Cyprinus aera* are the same species." Thus agreeing with McClelland who considered these fish identical, and Dr. Günther who supposed them to be so, I have taken Buchanan's first specific name *bata* instead of his second *aera*, and which I see no reason for altering.

CIRRHINA FULUNGEE.

Chondrostoma fulungee, ? Sykes, T. Z. S. ii, p. 358.

Cyprinostomus fulungee, *Günther, Catal. vii, p. 76.

B. III, D. 2/8, P. 15, V. 9, A. 2/5, C. 19, L. 1. 44, L. tr. 8/9.

Length of head 1/6, of caudal 1/5, height of body 1/5 of the total length. *Eyes*, diameter 1/4 of length of head. 1 diameter from end of snout. Dorsal and abdominal profiles equally convex. Snout overhangs the mouth, a few pores upon it. Lips smooth. *Barbels*, a pair of short rostral, but no maxillary ones. *Scales*, 6½ rows between the lateral line and the base of the ventral fin. *Colours* silvery, edges of scales darkest; fins stained.

Hab.—Púna, growing to 6 inches in length.

Whether this is Sykes' species is of course doubtful, as he has not (so far as I know) left any figure of it, but the resemblance, considering these specimens came from the Dakhin (Deccan), is sufficiently strong to avoid giving another name. Sykes states A. 6, but I conclude he may have counted the two first undivided ones as one.

*(*IRRHINA* ROSTRATA.

Crossochilus rostratus, Günther, Catal. vii, p. 72, and Zool. Record, 1870, p. 135.

B. III, D. 11, A. 7, L. 1. 38, L. tr. $5\frac{1}{2}/7$.

The height of the body is somewhat more than the length of the head, which is one-fifth of the total without the caudal. *Eyes*, diameter $2/7$ of length of head, and situated somewhat behind its middle. Snout conical, long, and much protruding beyond the mouth. *Barbels* two, rostral, shorter than the eye. *Fins*, origin of dorsal considerably in advance of that of the ventral, and midway between the end of the snout and the posterior end of the anal fin; pectoral a little longer than the head, terminating at a great distance from the ventrals. *Scales*, 4 rows between lateral line and ventral fin. *Colours*, a black spot (composed of about four smaller spots) on the fifth and sixth scales of the lateral line.

Hab.—Cossye river, from which a single specimen 4 inches long has been obtained.

Dr. Günther (Proc. Zool. Soc. 1871, p. 762) appears surprised at my not having perceived the difference between this species and *C. bata* from his first description (Catal. vii, p. 72); his definition there of genus *Crossochilus*, p. 71, gives "Barbels two or four: if two, the upper only are present." *C. bata* having only two and those the lower or maxillary ones, seemed to show that some inaccuracy existed in the definition of the genus; whilst in the text of *C. rostratus* all that is said about these appendages, is—"Two barbels only, shorter than the eye," without stating whether they are rostral or maxillary, otherwise the description agreed pretty fairly with *C. bata* which came from the same locality. Subsequently in the Zool. Record, 1. c. he states that *C. rostratus* "has a pair of upper barbels only, but no maxillary barbels," thus clearing up this point. I have stated this much because Dr. Günther in the Proc. Zool. Soc. 1871, p. 762 asks: "Will Mr. Day point out where I have given this second description, or whether I have added one iota to my original description in 1868?"* This date I conclude

* As some time must elapse before my *Silurids* find a place in the Journal, I propose offering a few remarks upon *Pseudotropheus tuckeyi*, Sykes. Dr. Günther in the Proc. Zool. Soc. 1871 in remarking on my having been mistaken in considering the skin of this fish, received from the Zool. Soc. as being one of Col. Sykes' types of his paper, states, the registry does not give his name as a donor once, and of the East Indian Museum "although I searched carefully that Museum (before and after the

is only another inaccuracy, as Vol. vii of the Catalogue is dated November 1st, 1867, and contains the description I have adverted to.

Genus. SCAPHIODON, Heckel.

Capoëta, sp. *Chondrostoma*, sp. Cuv. and Val.

Dillonia and *Gymnostomus*, sp. Heckel.

Abdomen rounded, snout rounded; mouth transverse, inferior, having the mandibular edge nearly straight and sharp, the mandibles angularly bent inwards. A horny layer inside the lower jaw, which last is not covered by lip. No lower labial fold. Barbels four, two, or absent. Pharyngeal teeth compressed, truncated, 5 or 4, 3, 2/2, 3, 4 or 5. Dorsal fin of moderate extent (up to about ten branched rays), its last undivided ray being osseous and serrated, or else articulated; anal rather short. Scales large, of moderate or small

transfer of its fish collection to the British Museum) for types of Colonel Sykes's paper I failed to discover them."

In the Catalogue of the fishes of the British Museum, by Dr. Günther, Vol. v, p. 46, is "*a*, *b*, eight and a half to nine and a half inches long. Dikhun. From Colonel Sykes's collection, types of *S. halibut*, Sykes." At p. 76, under *Mystus caucasicus* is a specimen "from the collection of Colonel Sykes" about the same size as his published figure. At page 187 under *Glyptothorax lanceolatus* is "*a*. Type of the species from the collection of Col. Sykes." Thus in the Catalogue of the fishes of the British Museum the possession of some of Sykes' types is asserted but where they came from I believe is not known; Col. Sykes's name is not referred to, that I see, when the collections in L. I. Co. Museum are mentioned, though Cantor's, Griffith's and McClelland's are. Still it seems that I was mistaken in considering this skin as one from the collection of the Zoological Society, whose donor's name was omitted from the Catalogue, and which had on it a label with one of Col. Sykes's names, as being one of his types.

Respecting my being assisted, as Dr. Günther more than insinuates, in determining the species by his having erroneously (as he believes) written *P. hutchins* on the bottle, a slight reference to dates again disposes of this. My first inspection of this skin was in 1870, whilst in the Proc. Zool. Soc. 1869, p. 617, I observed when writing from Barmah—"The *Pseudotrapinus hutchins*, Sykes, or *P. longicaudatus*, Günther, is tolerably abundant in the Irrawadi and its branches." Since then I have received it from Puna in the Dikhun (Deccan).

Lastly Dr. Günther states the skin which is 6 inches long (Sykes's figure is $5\frac{1}{4}$) "had been presented with others to the Society by Mr. Willie in 1834, that is five (four?) years before Col. Sykes communicated his paper to the Zoological Society." To complete this observation, I may continue that Col. Sykes left India in 1831, and though the "fishes of the Dikhun" were published in 1841, he expressly observes in a note, that "although the preceding details respecting the fishes of the Dikhun were comprised in a report to the Court of Directors of the East India Company in June, 1831, they were only communicated to the Zoological Society on the 27th November, 1838." Thus the Zoological Society obtained the specimen (*Pimelodus nucha* as registered, not very closely resembling a *Pseudotrapinus*) three years after Col. Sykes returned to Europe and subsequent to the time when his manuscript had been completed and given to the E. I. Company.

size and sometimes irregularly disposed. Lateral line passing to the centre of the base of the caudal fin.

Geographical distribution. Rivers of Western Asia extending eastwards to those in the Sind hills.

SYNOPSIS OF SPECIES.

A. Barbels two

1. *Scaphiodon Watsoni*, D. 3/10, A. 2/7, L. 1. 33. An osseous serrated dorsal ray. Scales regularly arranged. *Sind hills.*

2. " *irregularis*, D. 3/10, A. 2/7, L. 1. 36. An osseous, serrated, dorsal ray. Scales irregularly arranged. *Sind hills.*

1. SCAPHIODON WATSONI.

B. III, D. 3/10, P. 15, V. 8, A. 2/7, C. 19, L. 1. 33, L. tr. 6/6.

Length of head 1/5, of caudal 1/5, height of body 2/9 of the total length. *Eyes* situated in the commencement of the anterior half of the head, diameter 2/9 of length of head, $1\frac{1}{2}$ diameters from the end of the snout. Interorbital space somewhat convex. Snout rounded and covered with glands; mouth transverse, inferior, mandibles sharp not enveloped in lip, and having a horny layer inside. A pair of maxillary barbels as long as the eye. *Fins*, dorsal commences rather in front of the ventrals, and midway between the end of the snout and the base of the caudal, its last undivided ray strong, osseous, serrated, as long as the head without the snout, and nearly as long as the branched rays, which are two thirds as high as the body. Pectoral as long as the portion of the head posterior to the angle of the mouth, but not reaching the ventrals. Caudal forked. *Lateral line*, very slightly curved, $3\frac{1}{2}$ rows of scales between it and the ventral fin. *Colours* silvery, dashed with gold, lightest on the abdomen. Various and very irregular black spots on the body.

Hab.—Sind hills. I have much pleasure in naming this species after H. E. Watson, Esq., who largely assisted me in making collections of specimens of natural history whilst in Sind.

2. SCAPHIODON IRREGULARIS.

B. III, D. 3/10, P. 17, V. 8, A. 2/7, C. 19, L. 1. 36, L. tr. 9/9.

Length of head, caudal fin and height of body, each 1/5 of the total length. *Eyes*, situated in the commencement of the anterior half of the head, $1\frac{1}{2}$ diameters from end of the snout and apart. Interorbital space nearly flat, snout somewhat rounded, covered with glands and having a depression across it from eye to eye. *Fins*, dorsal commences rather before the ventrals midway between the end of the snout and the base of the caudal fin, its third undivided ray is osseous, weak, and serrated, nearly half as long as the head, whilst the fin is three fourths as high as the body. Pectoral nearly as long as the head; caudal forked, its lower lobe the longer.

Scales, two or three rows above the lateral line are of a large oblong form, above these are numerous small irregular ones, whilst the scales on the chest are likewise very small; four and a half rows exist between the lateral line and the base of the ventral. *Colours* olive, shot with gold.

Hab.—Rivers in the Sind hills up to 3500 feet elevation. I have also received from Dr. W. Waagen,* four specimens of a species of this genus obtained from Marri, and which are scarcely separable from the foregoing; they have L. l. 38, L. tr. $7\frac{1}{9}$, whilst the rows of scales above the lateral line are not so distinctly irregular. The largest of these specimens is 6 inches in length.

BARBUS (BARBODES) HIMALAYANUS.

Chit-rah-too, Panj.

B. III, D. $3\frac{3}{8}$, P. 15, V. 9, A. $2\frac{2}{5}$, C. 17, L. l. 32-34, L. tr. $5\frac{1}{6}$.

Length of head nearly $1\frac{1}{4}$ ($1\frac{1}{13}$), of caudal $1\frac{1}{6}$, height of body $1\frac{1}{4}$ of the total length. *Eyes*, diameter $2\frac{1}{11}$ of length of head, $2\frac{1}{4}$ diameters from end of snout, and 2 diameters apart. Dorsal and abdominal profiles equally convex. *Head*, much compressed, a depression across the snout just anterior to the orbits, lower lip lobed as in *B. tor*; upper jaw the longer without thickened lips. *Barbels*, the rostral pair of the same length as the maxillary, and they equal $1\frac{1}{2}$ diameters of the orbit. *Fins*, dorsal commences midway between the nostrils or the anterior margin of the orbit and the base of the caudal fin, its spine is moderately stout, entire, and equals the length of the head without the snout, upper margin of fin concave; pectoral as long as the head without the snout, it does not reach the ventral, which is slightly shorter and does not extend so far as the base of the anal, which last reaches the root of the caudal when laid flat; caudal forked, lobes of equal length. *Scales*, $3\frac{1}{2}$ rows between the lateral line and the base of the ventral fin. *Colours* golden above, becoming silvery below; the margins of the scales with numerous fine black dots, in the young a black mark behind the gill openings; fins reddish.

Hab.—Ussun river, about four miles from Simla. Out of five specimens the longest was 7 inches in length.

BARBUS (PUNTIUS) WAAGENTI.

B. III, D. $\frac{2-3}{8}$, P. 15, V. 9, A. $2\frac{2}{5}$, C. 17, L. l. 23-24, L. tr. $4\frac{1}{7}$.

Length of head $1\frac{1}{4}$, of caudal $2\frac{2}{9}$, height of body $1\frac{1}{3}$ of the total length. *Eyes*, in the anterior half of the head, $3\frac{1}{4}$ of a diameter from end

* Besides the fishes alluded to in this paper, the collection contained the following from Marri in the Panjáb: *Macromis Lamarrii*, Val., *Labeo rionorbynchus*, McClell., *Barbus tor*, H. B. Likewise *Barilius piscatorius*, McClell., from a fresh water stream near Wallus. Also one small specimen of *Cirrhitina johama*, H. B., and several of *No-macleilus corica*, H. B.

of snout. Upper surface of the head flattened; mouth horse-shoe shaped, compressed, and anterior, lower jaw not covered by lip; the posterior extremity of the maxilla reaches half way to below the orbit. *Barbels* absent. *Fins*, upper margin of dorsal straight, the fin is half as high as the body and without any osseous ray, it commences midway between the posterior margin of the orbit, and the base of the caudal; pectoral as long as the head without the snout, not reaching the ventral, which arises under the anterior dorsal rays and does not extend to the anal; caudal forked. *Scales*, $4\frac{1}{2}$ rows between the row which contains the lateral line and the base of the ventral fin. *Lateral line* ceases on the seventh scale. *Colours* silvery, darkest above; a black blotch on the 17th and 18th rows of scales, and posterior to the anal and dorsal fins.

Hab.—From Chua Saidar Shah, Salt Range; specimens up to $2\frac{1}{4}$ inches in length were collected by Dr. Waagen who kindly furnished me with them.

BARBUS (PUNTIVS) VITTATUS, Pt. II. p. 107.

From a recent examination of several fine specimens of this fish obtained by Dr. Stoliczka in Kaehh I find its last undivided dorsal ray is articulated, not osseous; so it must be removed to the division of *Puntius*, being without osseous dorsal ray.

Genus. BARILIUS.

BARILIUS EYEZARDI.

B. III, D. 2/7, P. 13, V. 9, A. $\frac{2}{12-13}$, C. 17, L. 1. 40, L. tr. 7/4.

Length of head $2/11$, of caudal $2/11$, height of body $1/5$ of the total length. *Eyes*, diameter $1/3$ of length of head, $3/4$ of a diameter from the end of the snout and apart. *Barbels* absent. The maxilla extends to beneath the anterior margin of the orbit. Humeral process short, being scarcely produced. Third suborbital bone twice as deep as the uncovered portion of the cheek below it to above the angle of the preopercle. A well developed knob at the symphysis of the lower jaw. *Fins*, pectoral as long as the head, the dorsal commences midway between the hind edge of the orbit and the end of the caudal fin, whilst its posterior half is above the anal. Lower caudal lobe the longer. *Colours* silvery; dorsal, caudal and anal deep orange, the first two having a black edge.

Hab.—Puna; growing to $4\frac{1}{2}$ inches in length. Out of the specimens collected through the assistance of Colonel Eyezard were two of this species, and subsequently I have received one obtained in the same locality by Dr. Stoliczka.

NEMACHEILUS MONTANUS, Pt. V. p. 192.

Having been able to collect near Simla numerous specimens of this fish, from whence McClelland obtained his types, I find that considerable variations occur in the species.

The first, apparently typical form, has D. $\frac{2-3}{7}$. Head nearly $\frac{2}{3}$ as wide as long; preorbital terminating posteriorly in an obtuse projection. Scales very minute, but most distinct in the posterior part of the body. In some the dark bands on the body are as wide as, in a few narrower or wider than, the ground colour. The dorsal has one row of spots, which are present or absent on the caudal.

The second variety has D. $\frac{2}{7-8}$. Head at least $\frac{2}{3}$ as wide as long, no projection to preorbital. Colours the same.

The third form has D. $\frac{2}{7-8}$. Head almost as wide as long, depressed, muzzle rounded; no preorbital prominence, the pectoral a little longer than in the two previous forms. Colours the same except that some have several rows of black spots both on the dorsal and caudal fins, others have only a single row.

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ON TWO UNDESCRIBED CASHMIR BIRDS,—by W. E. BROOKS, C. E.  
*Assensole.*

[Received 16th October, read 4th December, 1872.]

ACCENTOR JERDONI, sp. nov.

Bill shorter, feebler and sharper pointed than in *A. strophiatius*, and not nearly so black. One specimen has the basal portion of the lower mandible pale brown. Total length 1·5 inches; wing 2·54 to 2·62; tail 2·3 to 2·51; bill at front ·35; tarsus ·75.

This bird in mode of coloration strongly resembles *A. strophiatius*, yet it is very distinct; being altogether a paler, and less boldly marked species. The striation of the back is comparatively cloudy, and resembles that of *Pipaster arboreus*. The upper surface is a mixture of brownish grey and dark brown, and there is none of the warm rufous tint observable on the back of *A. strophiatius*. The rump and upper tail coverts, which are strongly streaked in *strophiatius*, are plain greyish brown in our bird, with hardly the faintest streak perceptible. The anterior portion of the supercilium is whitish, as in *strophiatius*, but the remainder, instead of being deep rusty red, is merely warm buff or fulvous. Above the supercilium is a dark band on each side of the head, which is continued to the occiput. The crown of the head is brownish grey, mottled indistinctly with pale brown. The back is brown-

ish grey, streaked with dark brown. Ear coverts dark slatey brown, slightly mottled with greyish white. A patch of pure grey, very faintly streaked with brown, between the ear coverts and bend of wing. From chin to upper breast white, with small neat dark brown spots; below this white, a broad ( $3/4$  inch) pectoral band of rufous, not nearly so deep and bright as in *strophhiatus* and devoid of dark streaks; *strophhiatus* sometimes has the pectoral rufous strongly streaked. Rest of lower surface dull whitish with the flanks tinged with brown, the latter having also broad cloudy brown streaks. Lower tail coverts pale brownish, with broad whitish edges; wings and tail brown, of a much lighter shade than in *strophhiatus*, and having pale brown margins to the feathers, particularly so in the case of the wing coverts and tertials.

I have thought necessary to refer comparatively to *A. strophhiatus* in this description, on account of the similar distribution of colours, and size of the two birds. They can only be understood by contrasting them. I have one specimen of the new bird from Dhurnsala, and others from Cashmir. *A. strophhiatus* ranges from near Simla to Darjiling; but at what point west of Simla is its western limit, and where the eastern one of *A. Jerdoni* begins, is not yet known. Captain Cock took some nests of the new bird with eggs (uniform greenish blue) at Sonamurg, up the Scind valley in Cashmir.

The other bird which I have to describe is

#### TROGLODYTES NEGLECTUS, sp. nov.

It is of the same size as *T. Nipalensis*, but very much lighter in colour and having a strong resemblance to the English wren. It is dull reddish brown above, becoming brighter in tone towards and on the tail. The whole of the upper surface is covered with wavy dark brown bars, which are very indistinct on the head, but increase in distinctness as the tail is reached, upon which they are very well marked. Below pale brownish, with the abdomen and belly nearly white, the whole of the under surface, like the upper, being barred with brown. Lower tail coverts brown, spotted with white. Bill brown, paler on lower mandible at base; legs and feet brown. Length 3.5 in.; wing 1.8; tail 1.2; bill at front .42; tarsus .63, central toe and claw .57; hind toe and claw .53. The sexes are alike in size and plumage.

Apart from its comparatively pale tone of colouration its much smaller and slenderer tarsus and foot easily distinguish it from *T. Nipalensis*, which is a very dark brown sooty looking little bird. Of *T. Nipalensis* the central toe and claw measure .7; hind toe and claw .62.

The Cashmir wren is not uncommon in the pine woods of Cashmir, and in habits and manners it strongly resembles its European congener. Its song is very similar, and quite as pretty. It is a shy active little bird, and

very difficult to shoot. I found two nests. One was placed in the roots of a large upturned pine, and was globular with entrance at the side. It was profusely lined with feathers and composed of moss and fibres. The eggs were white, sparingly and minutely spotted with red; rather oval in shape, measuring .66 by .5. A second nest was placed in the thick foliage of a moss grown fir tree, and was about 7 feet above the ground. It was similarly composed to the other nest, but the eggs were rounder, and plain white, without any spots.

NOTES ON BARMESE AND ARAKANESE LAND SHELLS, WITH DESCRIPTIONS OF A FEW SPECIES,—by W. THEOBALD, Esq., and DR. F. STOLICZKA.

(Received and read 7th August, 1872.)

(With plate XI.)

The accompanying notes were suggested by the recent discovery of several new species of landshells, chiefly in the Arakan hills and in the neighbourhood of Moulmain. In addition to these a few species were found which proved to be identical with those formerly described from Sikkim, the Khasi hills, and Upper Pegu; the slight variations and the geographical distribution of these species will be noticed in connection with the descriptions of the new species.

CYCLOSTOMACEA.

RAPHAULUS PACHYSIPHON, n. sp. Pl. XI. Fig. 1.

*R. testa cylindræco ovata, anguste perforata, solida, fusca; spira obtusa, apice ad latus inclinato, excentrico; anfractibus 5½ convexiusculis, transversim confertissime striolatis, ad suturam simplicem adpressis; anfractu penultimo sensim, ultimo valde, descendente, primo supra aperturam deplanato, altero ad suturam paulo constricto, ad basin convexiusculo; apertura fere verticali, circulari, peristomate pallide fucescente, plane expanso atque crasso, supra ad anfractum penultimum labio attenuato et fere horizontali adnato, postice (aut supra) ad suturam tubulo crasso, deflexo instructo. Long. 12.6, lat. anf. penult. 7.6, diam. apert. cum perist. 6.2, apert. int. 3.6 m.m.*

*Hab. Prope Moulmain, valle Ataran fluminis.*

A rare and very distinct from any of the other known species by its distorted spire and externally bent down sutural tube. The figures 1 and 1a are of the natural size, 1b and 1c are the corresponding figures, enlarged twice the natural size.

*Genus, ALYCEUS.*

Of this genus several species were found which were previously only known to occur in Sikkim, and in the Khasi and Garo hills. *A. pusillus* was met with at Nattoung in the Mendon district, Pegu; *A. urnula*, and a small variety of *A. Ingrami*, at Mai-i in the Arakan hills; *A. crispatus* at Maianoung and near Moulmain; at this last named locality also occurred a large, red-lipped variety of *A. urnula*, and several specimens of *A. Richthofeni*, the shells slightly vary in the height of the spire, but all are of exactly the same character.

*ALYCEUS KURZIANUS*, n. sp. Pl. xi. Fig. 2.

*A. testa subglobose conoidea, late umbilicata, pallide rubescente; anfractibus 4, valde convexis, sublaevigatis, transversim distanter obsolete costellatis, ultimo anfractu medio ambitus modice inflato, confertim costulato, tum valde constricto laevigatoque, in constrictione costâ obtusâ transversâ instructo, rursusque expansiusculo atque paulo deflexo; apertura magna, obliqua, subrotundata, supra obtuse angulata, infra anguste canaliculata; preritremate modice incrassato, duplici, externo paulum expanso, labro interno plicatulo, labio sublaevigato. Diam. maj. specim. maximi 3.5, minor 3, alt. 2.7 m.m.*

*Hab.* Nattoung in provincia Burmana, Prome dicta.

The peculiarly formed aperture with the lower canal and its internal plication on the outer lip readily distinguish this species from *A. polygona*, which besides differs by more rounded and higher whorls. Mr. Kurz brought some years ago a specimen of this interesting species from Pegu; more recently Mr. Theobald collected it near Nattoung in the Western Prome district. The measurements above given are those of one of the largest specimens.

*Genus, DIPLOMMATINA.*

Several remarkable varieties of formerly described species occurred with other known forms, both in Arakan and at Moulmain. Among these the following deserve special notice.

1. *D. sperata*, Blf., was found at Mai-i in the Sandoway district. It is a very rare shell.

2. *D. polypleuris*, Bens., occurs abundantly in the Sandoway district and at Nattoung, more rarely near Moulmain.

3. *D. olygopleuris*, Blf. Very fine specimens, measuring 3 m.m. in length and 1.5 m.m. in thickness, were collected on the Kumah hill in Arakan, and a solitary specimen was found at Baom, also in Arakan. The latter exactly agrees in form and size (length 2 m.m.) with typical Cachar specimens, but while in these the costulation generally becomes obsolete on the two last whorls, the same is well developed and comparatively slightly closer



on all the whorls of the Arakanese specimen; the difference is, however not sufficient to indicate a specifically distinct shell from the one above named.

4. *D. exilis*, Blf., was found on the limestone hills at Damotha and at the Farm-caves near Moulmein. Most of the specimens somewhat exceed in size those from Upper Barma; the costulation of the whorls also is a shade finer, though variable in different specimens, and the outer lip of the aperture a little more expanded; however, the general form, character and proportion of the whorls is exactly the same. One of the largest specimens measures: total length 3.2, diameter of penult. whorl 1, diam. of apert. with perist. 0.9 m.m.; it has nine whorls.

5. *D. nana*, described by Mr. W. T. Blanford from Pegu, also occurs near Moulmein; the specimens only are a trifle smaller than the type shell, but they are very distinctly transversely costulated.

#### 6. DIPLOMMATINA ANGULATA, n. sp. Pl. xi. Fig. 3.

*D. testa ovato elongata, dextrorsa, vix rimata, sordide albida, anfractu penultimo latissimo, apice obtusiusculo, pallide rubido, submammillato; anfractibus sex, primis duobus laevigatis, cæteris valde convexis, ad peripheriam plus minusve distincter angulatis, transversim confertissime costellatis aut acute striatis; ultimo basi contracto: sutura profunda, simplice; apertura late circulari, peristomate undique expanso, bilabiato, interno subrecto, ad marginem columellarem dente obliquo instructo, externo ad anfractum penultimum constrictum modice ascendente. Long. 2, lat. maxima 0.8, diam. apert. 0.6 m.m.*

*Hab. Prope Moulmain, provincia Martaban.*

The peculiar angulation of the whorls, combined with the very close transverse costulation, or almost striation, and the proportionately large aperture readily separate this species from any other as yet known. Mr. Theobald obtained numerous specimens on the limestone hill near Damotha, and also south of Moulmain, together with *D. carneola*, Stol.

#### 7. DIPLOMMATINA RICHTHOFENI, n. sp. Pl. xi. Fig. 4.

*Dipl. testa ovate elongata, turrata, dextrorsa, albida, rimata; spira conoidea; anfractibus septem, convexis, ad medium subangulatis, sutura simplici junctis, penultimo ultimo latiore: primis duobus apicem formantibus laevigatis, cæteris transversim conferte costellatis, ultimo basi convexo, angustato, supra ad anf. penultimum ascendente; apertura parva, circulari, peristomate duplici: interno tubuliforme modice producto atque dilatato; labio ad basin dente obliquo et magno instructo. Long. 2.5, lat. maxima 0.8, diam. aperturæ 0.5 m.m.*

*Hab. Prope Moulmain; (testa rarissima).*

A species closely allied to *D. angulata*, but more slender, with less distinctly angulated whorls, non-mammillated apex, with a slightly more distant costulation and with a comparatively smaller aperture.

Only the solitary figured specimen of this shell was obtained on the limestone hill at the so-called Farm-caves.

*Genus, GEORISSA.*

1. *Georissa Blanfordiana*, Stol., (J. A. S. B., 1871, vol. xl, pt. ii, p. 158, pl. vi, fig. 6.) described from a single specimen, occurred abundantly both at the Farm-caves and South of Moulmain. The type specimen is rather a young shell, which, when adult, attains a very distinct ovately conoid form, the whorls being in proportion somewhat less convex; the inner lip is strongly thickened. One of the largest specimens measures: total length 2·8, greatest width of the last whorl 2, height of aperture 2·2, its width 1 m.m.

When alive, the shell is rather deep succineous and semi-transparent; old specimens become white. The operculum is of the usual form, very thin, with a long internal process, pale coloured, becoming blackish towards the centre.

2. *G. Rawesiana*, Bens., also known from a single specimen, found at the Farm-caves near Moulmain, occurred in numerous examples on two limestone hills in the Ataran valley. The shell differs from *G. liratula*\* by a more conoid shape, particularly in the adult, and by a much finer spiral striation, there being on the penultimate whorl as many as seven or eight of these spiral striae, while in *liratula* there are only five of them. Young specimens of both species are equally globose, and of a succineous structure. One of the largest specimens of *G. Rawesiana* measures: length 2·4, largest diam. 1·8, height of aperture 1, its width 0·8 m.m. In adults the fine sculpture wears off remarkably easily, and such specimens closely resemble *G. Blanfordiana*, but have the whorls more convex, and the aperture proportionately smaller.

3. *G. pyxis*, Bens., a species common about Prome, also occurs on the Kumah hill in the Sandoway district.

4. *GEORISSA FRATERNA*, n. sp. Pl. xi. Figs. 5 and 6.

*G. testa cylindraceo conoidea, solidula, pallida, imperforata, regione umbilicali paulo impressa; anfractibus 3½, convexis, supra modice subtruncatis, sutura per-profunda junctis, spiraliter crasse liris, liris in anfractu penultimo quinque, supera a sutura remotiuscula; apice valde mammillato; ultimo anfractu spirā breviorē, basi convexiusculo, spiraliter*

\* J. A. S. B. vol. xl, pt. ii, 1871, p. 157, pl. vi, fig. 5.

*striato* ; *apertura fere semicirculari, labro simplici, antice modice recedente, margine subobtusato instructo, labio recto, incrassato* ; *operculo testaceo, tenui, subdiaphano, paucispirato.* *Alt. testæ 1·4, diam. max. 0·95 m.m.*

*Hab. In valle fluminis Ataran, prope Moulmain.*

Allied to *G. pyris* in having the uppermost spiral ridge on the whorls somewhat remote from the suture, but the ridges themselves are stronger, the whorls somewhat less numerous, the apex very distinctly mammillate, and the entire form of the shell more slender and cylindrical. Only three specimens were discovered by Mr. Theobald.

The slight variation in the shape is indicated by the figures given of two specimens.

*ACMELLA HYALINA*, n. sp. Pl. xi. Fig. 7.

*Ac. testa ovato conica, modice perforata, hyalina, sordide albida* ; *spira obtusa* ; *anfractibus 4½ convexiusculis, sutura simplici et profunda junctis, ad suturam subtruncatis, lavigatis, ultimo spirâ paulo brevior, basi convexo* ; *apertura regulariter ovata, supra (vel postice) subangulata, haud obliqua, peristomate tenui, fere continuo.* *Long. 1, lat. 0·7 m.m. (Operculum deest).*

*Hab. In collis calcareis prope Moulmain.*

Of the two known species of the genus, *A. tersa* and the doubtful *milium*, both described by Benson from the Khasi hills, the present new form closely agrees in the shape of the shell with the first, and in the smoothness of the surface with the second.

*Acmella*, Blanford, is evidently quite distinct from *Georissa*, or *Hydrocena*, the latter being one of the HELICINIDÆ, while the former is most likely a Cyclophorid, or possibly one of the intermediate forms close to *Assimineæ* and *Omphalotropis*, connecting the CYCLOPHORIDÆ with the RISSOIDÆ. (Comp. Blanford in Ann. and Mag. N. H. for March 1869).

*HELICACEA.*

*PUPA FILOSA*, n. sp. Pl. xi. Fig. 8.

*P. testa ovato cylindræa, cornea, pellucida, apice obtusiuscula, rimato umbilicata* ; *anfractibus 4½ convexiusculis, sutura simplici junctis, transversim striis cuticularibus, obliquis, filiformibus ornatis* ; *ultimospirâ brevior, basi vix angustato, convexiusculo* ; *apertura subquadrangulari, recta, intus dentibus quinque instructa, labro undique paulo expansiusculo, atque incrassato, infra suturam subangulato, ad latus dentibus duobus parvis profunde sitis instructo* ; *labio tenuissimo, prope medium dentibus pliciformibus duobus approximatis, anteriore multo minore, pradito* ; *columella unidentata.* *Long. 2, diam. max. 1 m.m. ; apert. cum perist. 0·75 longa, antice 0·55, postice 0·75 m.m. lata.*

*Hab. In littore Arakanense ; satis frequens.*

A well marked species, both by its peculiarly subcylindrical shape and by the denticulations of the apertural margins; it is not uncommon on the Arakan coast.

MACROCHLAMYS [DURGELLA] KUMAHENSIS, n. sp. Pl. xi. Figs. 9 and 10.

*Macr. testa convexiuscule orbiculata, polita, tenui, cornea, anguste perforata, spira modice elevata; anfractibus  $4\frac{1}{2}$  convexis, regulariter accrescentibus, sutura simplici adpressa junctis, infra suturam distincte depressis atque subcanaliculatis, transversim exilissime obsoleteque striolatis; ultimo anfractu ad ambitum regulariter convexo, ad basin convexiusculo, in spatio umbilici rugulose spiraliter striato; apertura ampla, semilunata, paulo obliqua, margine externo simplici, columellari supra reflexiusculo, umbilicum partim tegente. Diam. maj. 9·6, min. 8·3. alt. 6; lat. apert. perist. incl. 5·4, ejusd. alt. 4·3 m.m. Speciminis secundi ejusdem magnitudinis altitudo testæ est 6·5 m.m., apertura 5·2 lata, et 4·5 m.m. alta.*

*Hab.* Kumah hill in montibus Arakanensibus, regione Sandoway.

Only the two figured specimens of this shell were found by Mr. Theobald at the above named locality. The species is intermediate between Blanford's *complanialis* and *nebulosa*, differing from the former by being somewhat depressed, by a comparatively slight sutural depression and larger umbilicus; from the latter it differs by its polished surface, less numerous and regularly convex whorls, particularly at the periphery of the last. These differences also apply in a comparison with *M. honesta* of Gould.

Besides the above described new species, *Glossula Peguensis*, *Gloss. hastula*, (somewhat larger than the Sikkim type shell), *Succinea semicerica*, *Sesara Basseinensis*, *Helicina Arakanensis*, *Pupina Blanfordi*, *Pterocyclas parvus*, several *Alycei* and *Diplommatinae* occurred on the Kumah hill and near Mai-i in the Sandoway district of Arakan.

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ON THE OSTEOLOGY OF SOME SPECIES OF BATS,—by G. E. DOBSON, B. A.,
M. B., ASSISTANT SURGEON, H. M.'s BRITISH FORCES.

Having lately obtained additional specimens of *MacroGLOSSUS spelæus*, from Mr. Theobald,* I have been enabled to have a complete skeleton made from an adult male.

As previously remarked by me, the index finger possesses no trace of a claw, but has instead a small, but distinct third phalanx connected with the

* Collected at the Farm Caves near Moulmain where the specimens, from which the description of the species was taken, were obtained by Dr. Stoliczka. (See Journ. As. Soc. Beng. Vol. xl, p. 261.)

second phalanx by a perfect joint. This phalanx is scarcely $\frac{1}{10}$ inch in length, and is wholly contained within the wing membrane.

If we compare the skull of *M. spelæus* with that of *Pteropus medius*, it will be found to resemble it very closely, differing from it only in size, and in the following points:—

In *Pt. medius*, the sagittal crest is very prominent, forming a sharp ridge continued forwards beyond the middle of the zygomatic arches, dividing at a short distance behind the post-orbital processes of the frontal into two ridges which become continuous with their posterior margins. In *M. spelæus*, the sagittal crest is very short, dividing, at a point corresponding to a line connecting the mastoid processes, into two widely separated very slightly elevated ridges continued forwards to the posterior margins of the post-orbital processes. In *Pt. medius*, the frontal is deeply furrowed between the roots of the post-orbital processes, in *M. spelæus* it is elevated. In *Pt. medius*, the post-orbital processes are very long and curved downwards, separated by a very short interval (in a skull before me 0.15 inch) from a corresponding process sent upwards from the zygoma, thus almost completely circumscribing with bone the margin of the orbit. In *M. spelæus*, the post-orbital processes of the frontals are short, and almost horizontal; the zygoma is slender, and there is no trace of an ascending process.

The bases of the skulls of *Pt. medius* and *M. spelæus* are very similar, the only difference noticeable being, that, in the former the foramen rotundum and foramen ovale are represented by a single opening, in the latter they are distinct.

In *Pt. medius*, the caudal vertebrae are wanting, in *M. spelæus* they are five in number, very short and rather thick.

The remainder of the skeleton of *M. spelæus* corresponds closely in form, and in the relative proportion of its parts, with that of *Pt. medius*.

I have read with some surprise Prof. Flower's statement* that, in the genus *Pteropus*, "there is no corresponding ascending process from the zygomatic arch,"—for, in a skull of *Pteropus medius*, Tem., (compared, above, with that of *Macroglossus spelæus*) the post-orbital process sent upwards from the zygomatic arch measures 0.15 inch along its anterior margin, 0.15 inch across its base, with a vertical height, posteriorly, of more than 0.10 inch.

The same author, at l. c. p. 153, remarks that Insectivorous Bats have no post-orbital processes of the frontals. This statement is only partially correct, for although many, perhaps most, genera of insectivorous bats do not possess post-orbital processes, yet in some genera they are not only present,

* Introduction to the Osteology of the Mammalia, by W. H. Flower, F. R. S. 1870, page 152.

but also,—in one genus especially,—quite as well developed as in the frugivorous.

In every species of the genus *Taphozous*, Geoff., examined by me, I have found well developed post-orbital processes. In a skull of *T. melanopogon*, Tem., before me, a long and slender post-orbital process of the frontal extends more than half the distance between the frontal bone and the zygomatic arch, forming nearly one-third of the entire circumference of the orbit.

Post-orbital processes of the frontals are also found in the genera *Megaderma* and *Nycteris*. In the latter genus the post-orbital process may be described as a triangular expanded lamina of bone, of which the base extends from the sagittal crest to the maxilla; in the former it is short and blunt, and its base is perforated, as in *Pteropus*, by a supra-orbital foramen.

In *Vesperugo pachypus*, Tem., a small post-orbital process exists.

The above examples show that in many species of insectivorous bats post-orbital processes of the frontals are present. In no species, however, have I succeeded in detecting corresponding zygomatic processes, as in the genus *Pteropus*.

BRIEF DESCRIPTIONS OF FIVE NEW SPECIES OF RHINOLOPHINE BATS,—
by G. E. DOBSON, B. A., M. B.

The following short descriptions of new species of Rhinolophine bats in the collection of *Chiroptera* in the Indian Museum are intended as prefatory to more detailed descriptions, to be published hereafter with illustrations.

1. *RHINOLOPHUS YUNANENSIS*, n. sp.

Ears large; antitragus separated from the outer margin by a deep, angular incision. Nose-leaf large; the horizontal horse-shoe shaped portion concealing the upper lip as in *Rh. lactus*. The upper edge of the central crest, anteriorly flattened, nasal crest meets, at the same level, the upper edge of the posterior vertical membrane. Lower lip divided by a single vertical incision. Wings from the ankles; tail contained within the interfemoral membrane, with the exception of the extreme tip; interfemoral membrane cut square behind, or slightly concave.

Length, head and body, 2·7 inches; tail 0·9; ear (anteriorly) 1·0; nose-leaf 0·7; forearm 2·2; tibia 1·1.

Hab.—Hotha, Yunan; collected by Dr. Anderson during the Yunan expedition.*

* Other new species of bats obtained by Dr. Anderson during the Yunan Expedition have been shortly described by the writer in the Proc. As. Soc. Beng. for Sept. 1871.

2. *RHINOLOPHUS GAROENSIS*, n. sp.

Ears acutely pointed with a well developed antitragus. Upper edge of the posterior vertical connecting process of the central nose-leaf forming an acutely pointed elevation; posterior nose-leaf terminating behind in a broad, triangular, pointed process.

Wings from the ankles, interfemoral membrane cut square behind; tip of tail free.

This species is closely allied to *Rh. cornutus*, Tem., from Japan, from which it differs mainly in size.

Length, head and body 1·5 inches; tail 0·7; ear (anteriorly) 0·5; forearm, 1·3; 2nd finger 2·0; 4th finger 1·7; tibia 0·6.

Hab.—Garo Hills, Assam. Collected by Major H. H. Godwin-Austen.

3. *RHINOLOPHUS ANDAMANENSIS*, n. sp.

This species resembles *Rh. affinis*, and may be referred to the same section of the genus. The anterior horizontal horse-shoe shaped portion of the nose-leaf is very broad and flat, concealing the muzzle when viewed from above, as in *Rh. Yunnanensis*. The posterior triangular nose-leaf is long, and produced backwards between the ears.

Wings from the ankles, or from the tibia slightly higher up. Interfemoral membrane cut square or slightly concave behind; tip of tail projecting.

Length, head and body, 2·5 inches; tail 0·9; ear (anteriorly) 0·85; ear (posteriorly) 0·75; forearm 2·05; thumb 0·45; tibia 1·0.

Hab.—Andaman Islands. Collected by Mr. Homfray, Assistant Superintendent, Port Blair, to whom the Indian Museum is indebted for many specimens illustrative of the zoology of the islands.

4. *RHINOLOPHUS PETERSII*, n. sp.

Ears acutely pointed, with an emargination immediately beneath the tip; antitragus large, separated from the outer margin by a deep angular incision.

Nose-leaf about same size as in *Rh. affinis*. The upper border of the posterior connecting portion of the central nasal crest is produced into a subacute point; the sides of the terminal part of the posterior nose-leaf are deeply emarginate, so that it ends in a small narrow projection.

Wings from the ankles; interfemoral membrane slightly triangular behind; tip of tail free, projecting about $\frac{3}{16}$ inch beyond the membrane.

This species resembles *Rh. acuminatus*, Peters, from Java, but differs from it, as Dr. Peters informs me, in having the terminal portion of the tail free, and in other respects, as in measurement, slightly, and in the form of the ears, &c.

Length (of a male) head and body 2·5 inches, tail 1·0 ; ear (anteriorly) 0·75 ; breadth of antitragus 0·3 ; length of forearm 2·0 ; thumb 0·1 ; tibia 0·9 ; foot and claws 0·5.

Hab.—Sent from some part of India, precise locality not known.

5. *PHYLLORHINA MASONI*, n. sp.

This species belongs to the same section of the genus as *Ph. Nicobarensis*, Dobson. As in that species, the concave front surface of the base of the transverse nose-leaf is divided into *two cells only* by a single central longitudinal fold ; the upper margin or crest of the transverse nose-leaf, and the thickened cordiform ridge behind the nasal orifices develop acute projections in the centre of their front surfaces as in *Ph. diadema*, Geoff. The horse-shoe shaped membrane is simple, with three secondary vertical processes of membrane on each side.

From the under surface of the symphysis of the mandible a small conical bony process projects downwards, about equal to the lower canine tooth in vertical extent.

Wings from the ankles ; tip of tail free ; interfemoral membrane triangular behind.

Length, head and body, 3·65 inches ; tail 1·65 ; ear (anteriorly) 1·1 ; forearm 3·35 ; 2nd finger 5·0 ; 4th finger 3·9 ; thumb 0·6 ; tibia 1·35.

Hab.—Moulmain, Burma.

This fine species was first submitted to me for examination by Mr. Wood-Mason, with the remark that it was most probably new ; I have, therefore, much pleasure in connecting his name with it.

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(*) Names of new species have an asterisk (*) prefixed.

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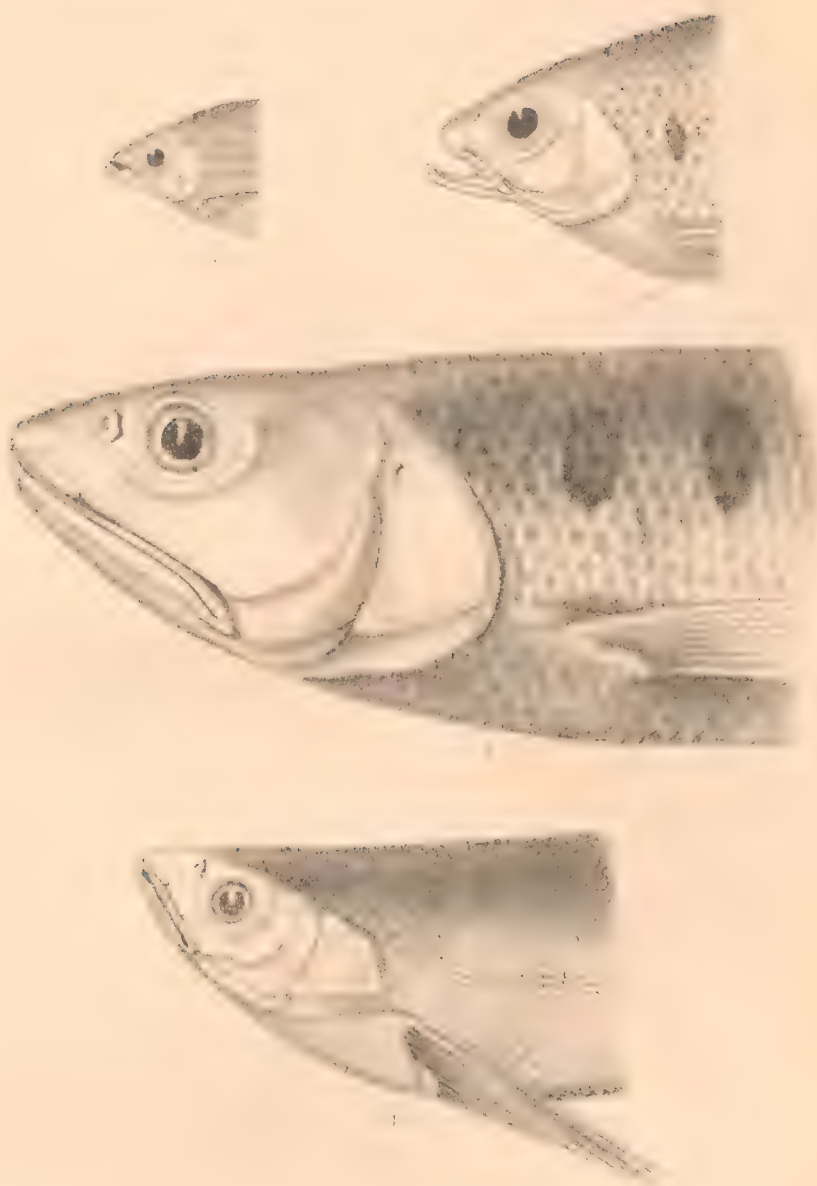
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 ERRATA.

Page 55, line 9 from below for *Sesia* read *Tesia*.

„ 219, „ 9 „ above for *ruficaudus* read *ruficaudatus*.



3. *Sardine*, etc.

1. *Danio aequipinnatus*.

2. *Barilius Bakeri*.

3. *Barilius lola*.

4. *Chela gora*.

Calcutta.



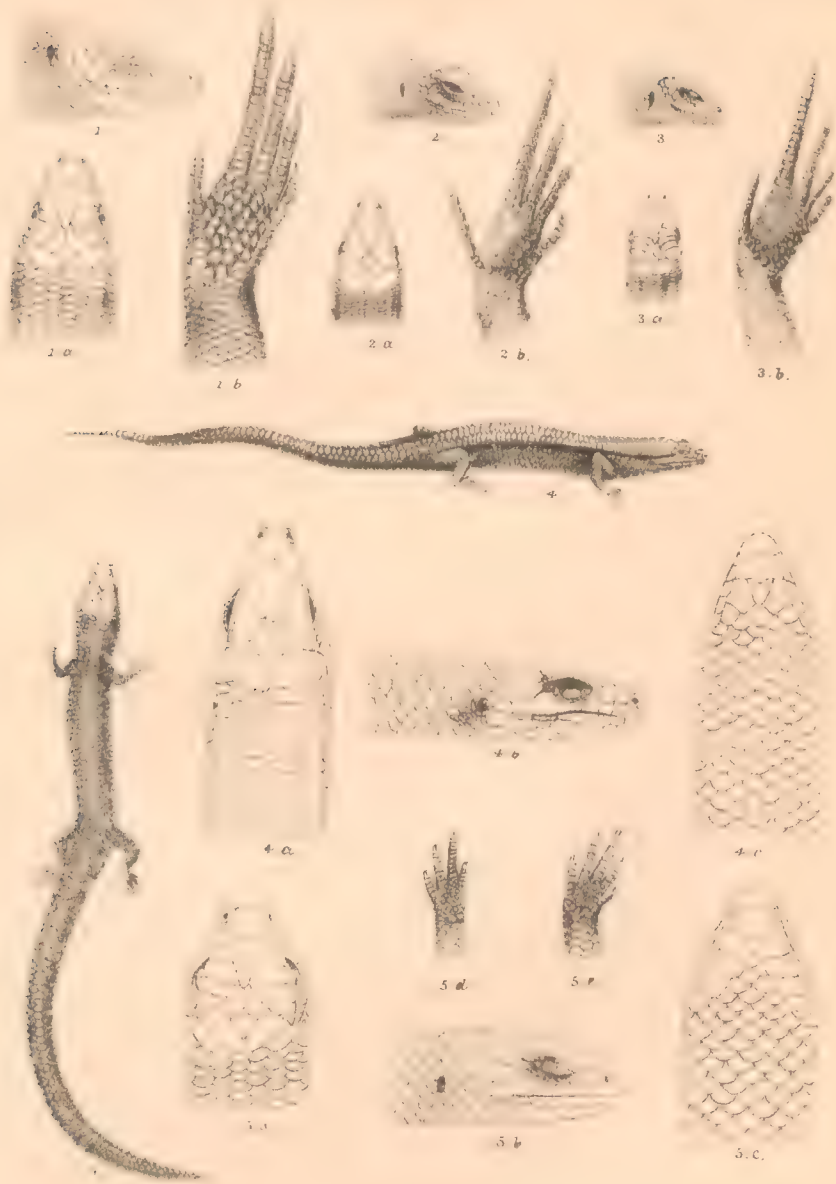
S. Sedgfield Lith.

1 *Hemidactylus sub-triedrus*, Jord. (P) 3. Hem. (*Doryura*) *Bermorei*, Blyth.
2. " " *giganteus*, n. sp. 4. *Gymnodactylus Lawlerianus*, n. sp.

Calcutta.



1-2 Hem. Dourar., *Mandellianus*, n. sp. 4 *Stetho Dayanes* n. sp. St. B. Luth Calcutta.
3 *Stetho tuberculatus*, Gray 5 *Chorasia Blanfordiana*, n. sp.



1. *Hinulia indica* Gray
2. " *maculata*, Blyth.
3. " *Dussumieri*, D & B.

4. *Moco sacra*, n. sp.
5. *Ristella Travancorica*, Bedd



1. *Euprepes macularius*, Bl.
2. *Mocia Sikkimensis*, Bl.
3. *Riopa cyanella* n. sp

4. *Riopa anguina*, Theob.
5. " *Hardwickii* Gray.
6. " *albopunctata*,



Osteology of *Trionops persicus*
(For explanation see p 141)





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|---------------------------------------|-------------------------------------|--|--------------------------------|
| 1. <i>C. cylindrica</i> p. 199 & 207. | 6. <i>C. loxodomo</i> p. 201 & 202. | 11. <i>C. insignis</i> , Gould p. 204 & 205. | 16. <i>C. insignis</i> p. 206. |
| 2. <i>C. lés.</i> p. 200. | 7. <i>C. ferruginea</i> p. 202. | 12. <i>C. insignis</i> , FF. H. & T. p. 204. | 17. <i>C. ovata</i> " |
| 3. <i>C. bacillum</i> p. 200 & 207. | 8. <i>C. Asiatensis</i> " " | 13. <i>C. monticola</i> " | 18. <i>C. Masoni</i> " " |
| 4. <i>C. ceylanica</i> p. 201. | 9. <i>C. fusiformis</i> p. 203. | 14. <i>C. Philippiana</i> p. 205. | 19. <i>C. Waagena</i> p. 209. |
| 5. <i>C. Theobaldi</i> " " | 10. <i>C. Gouldiana</i> " " | 15. <i>C. vespa</i> , p. 205 & 209. | 20. <i>C. Arakana</i> p. 210. |



- 1-5. *Cyclophorus Malayanus*. p. 262.
 6. " *Borneensis*, p. 263
 7. *Opisthoporus Penangensis*, p. 266
 8-10. " *solutus*, p. 266.
 11-13. *Pupina aureola*, p. 267

14. *Alcyonella gibbosulus*, p. 268
 15. *Lagocheilus trochoides*, p. 270
 16. " *striolatus*, p. 271



- 1 *Raphaulus pachysiphon*, p. 329.
 2 *Alycaeus kurrianus*, p. 330.
 3 *Diptommatina angulata*, p. 331.
 4 " *Richthofeni*, p. 331.

- 5-6 *Georissa fraterna*, p. 332.
 7 *Acmella hyalina*, p. 333.
 8 *Pupa alata*, p. 333.
 9-10 *Macrochl. Kumahensis*, p. 333.

